



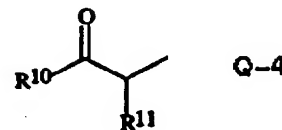
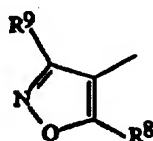
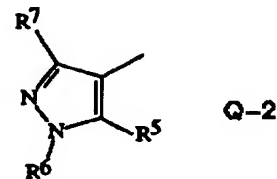
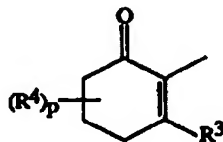
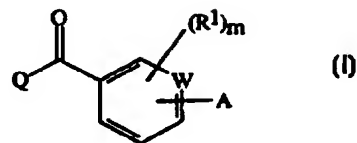
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : C07D 213/50, A01N 43/40, 43/56, 43/78, 43/80, C07D 213/53, 231/12, 231/20, 277/24, 401/12		A1	(11) International Publication Number: WO 97/46530
(21) International Application Number: PCT/US97/09569		(43) International Publication Date: 11 December 1997 (11.12.97)	
(22) International Filing Date: 2 June 1997 (02.06.97)		(81) Designated States: AL, AM, AU, AZ, BA, BB, BG, BR, BY, CA, CN, CU, CZ, EE, GE, HU, IL, IS, JP, KG, KP, KR, KZ, LC, LK, LR, LT, LV, MD, MG, MK, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TJ, TM, TR, TT, UA, US, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(30) Priority Data: 60/019,352 6 June 1996 (06.06.96) US 60/033,633 20 December 1996 (20.12.96) US		Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	
(71) Applicant (for all designated States except US): E.I. DU PONT DE NEMOURS AND COMPANY [US/US]; 1007 Market Street, Wilmington, DE 19898 (US).			
(72) Inventors; and (75) Inventors/Applicants (for US only): PATEL, Kanu, Maganbhai [US/US]; 149 Fairhill Drive, Wilmington, DE 19808 (US). RORER, Morris, Padgett [US/US]; 64 Lower Valley Lane, Newark, DE 19711 (US). TSENG, Chi-Ping [US/US]; 1103 Artwin Road, Wilmington, DE 19803 (US).			
(74) Agent: KATZ, Elliott, A.; E.I. du Pont de Nemours and Company, Legal Patent Records Center, 1007 Market Street, Wilmington, DE 19898 (US).			

(54) Title: HERBICIDAL PYRIDINYL AND PYRAZOLYLPHENYL KETONES

(57) Abstract

Compounds of Formula (I), and their N-oxides and agriculturally suitable salts, are disclosed which are useful for controlling undesired vegetation wherein Q is Q-1, Q-2, Q-3 or Q-4; and A, W, R¹, R³-R¹¹, and m are as defined in the disclosure. Also disclosed are compositions containing the compounds of Formula (I) and a method for controlling undesired vegetation which involves contacting the vegetation or its environment with an effective amount of a compound of Formula (I).



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Benin	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

TITLE

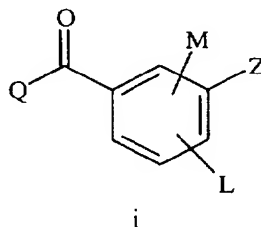
HERBICIDAL PYRIDINYL AND PYRAZOLYLPHENYL KETONES

BACKGROUND OF THE INVENTION

5 This invention relates to certain phenyl ketones, their *N*-oxides, agriculturally suitable salts and compositions, and methods of their use for controlling undesirable vegetation.

The control of undesired vegetation is extremely important in achieving high crop efficiency. Achievement of selective control of the growth of weeds especially in such useful crops as rice, soybean, sugar beet, corn (maize), potato, wheat, barley, tomato and
10 plantation crops, among others, is very desirable. Unchecked weed growth in such useful crops can cause significant reduction in productivity and thereby result in increased costs to the consumer. The control of undesired vegetation in noncrop areas is also important. Many products are commercially available for these purposes, but the need continues for new compounds which are more effective, less costly, less toxic,
15 environmentally safer or have different modes of action.

WO 96/26200 discloses pyrazoles of Formula i as herbicides:



20 wherein, *inter alia*

Q represents a cyclohexane-1,3-dione ring;

L and M are hydrogen, C₁-C₆ alkyl, C₁-C₄ alkoxy, halogen or nitro; and

Z represents a five to six-membered heterocyclic saturated or unsaturated group.

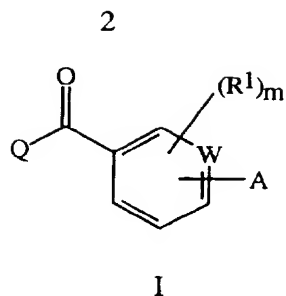
The phenyl ketones of the present invention are not disclosed in this publication.

25

SUMMARY OF THE INVENTION

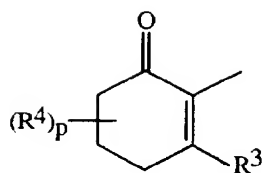
This invention is directed to compounds of Formula I including all geometric and stereoisomers, *N*-oxides, and agriculturally suitable salts thereof, agricultural compositions containing them and their use for controlling undesirable vegetation:

30

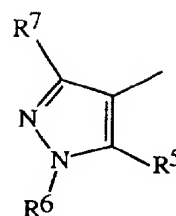


wherein

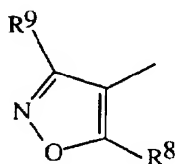
Q is



Q-1

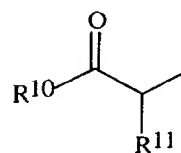


Q-2



Q-3

or



Q-4

5

A is a five- to ten-membered monocyclic or fused bicyclic ring system, which may be fully aromatic or partially saturated, containing 1 to 4 heteroatoms independently selected from the group nitrogen, oxygen, and sulfur, provided that each heterocyclic ring system contains no more than 2 oxygens and no more than 2 sulfurs, and each ring system is optionally substituted with one to three R^2 , provided that when a nitrogen atom of a heterocyclic ring is substituted with R^2 , then R^2 is other than halogen;

each R^1 is independently H, C_1 - C_6 alkyl, C_1 - C_6 haloalkyl, C_1 - C_6 alkoxy, C_1 - C_6 haloalkoxy, halogen, cyano, nitro, $-(Y)_t-S(O)_nR^{15}$ or $-(Y)_t-C(O)R^{15}$;

W is N or CH;

Y is O or NR^{12} ;

R^2 is C_1 - C_6 alkyl, C_1 - C_6 haloalkyl, C_3 - C_6 alkenyl, C_3 - C_6 haloalkenyl, C_3 - C_6 alkynyl, C_3 - C_6 haloalkynyl, C_1 - C_6 alkoxy, C_1 - C_6 haloalkoxy, C_3 - C_6 alkenyloxy, C_3 - C_6 alkynyloxy, mercapto, C_1 - C_6 alkylthio, C_1 - C_3

10

15

20

haloalkylthio, C₃-C₆ alkenylthio, C₃-C₆ haloalkenylthio, C₃-C₆ alkynylthio, C₂-C₅ alkoxyalkylthio, C₃-C₅ acetylalkylthio, C₃-C₆ alkoxycarbonylalkylthio, C₂-C₄ cyanoalkylthio, C₁-C₆ alkylsulfinyl, C₁-C₆ haloalkylsulfinyl, C₁-C₆ alkylsulfonyl, C₁-C₆ haloalkylsulfonyl, aminosulfonyl, C₁-C₂ alkylaminosulfonyl, C₂-C₄ dialkylaminosulfonyl, (CH₂)_rR¹⁶, NR¹²R¹³, halogen, cyano or nitro; or R² is phenyl or benzylthio, each optionally substituted on the phenyl ring with C₁-C₃ alkyl, C₁-C₃ haloalkyl, C₁-C₃ alkoxy, C₁-C₃ haloalkoxy, 1-2 halogen, cyano or nitro; R³ is OR¹⁴, SH, C₁-C₆ alkylthio, C₁-C₆ haloalkylthio, C₁-C₆ alkylsulfinyl, C₁-C₆ haloalkylsulfinyl, C₁-C₆ alkylsulfonyl, C₁-C₆ haloalkylsulfonyl, halogen or NR¹²R¹³; or R³ is phenylthio, phenylsulfonyl or -SCH₂C(O)Ph, each optionally substituted with C₁-C₃ alkyl, halogen, cyano or nitro; each R⁴ is independently C₁-C₃ alkyl, C₁-C₃ alkoxy, C₁-C₃ alkylthio or halogen; or when two R⁴ are attached to the same carbon atom, then said R⁴ pair can be taken together to form -OCH₂CH₂O-, -OCH₂CH₂CH₂O-, -SCH₂CH₂S- or -SCH₂CH₂CH₂S-, each group optionally substituted with 1-4 CH₃; R⁵ is OR¹⁴, SH, C₁-C₆ alkylthio, C₁-C₆ haloalkylthio, C₁-C₆ alkylsulfinyl, C₁-C₆ haloalkylsulfinyl, C₁-C₆ alkylsulfonyl, C₁-C₆ haloalkylsulfonyl, halogen or NR¹²R¹³; or R⁵ is phenylthio, phenylsulfonyl or -SCH₂C(O)Ph, each optionally substituted with C₁-C₃ alkyl, halogen, cyano or nitro; R⁶ is H, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₃-C₆ alkenyl, C₃-C₆ alkynyl or -CH₂CH₂OR¹²; or R⁶ is phenyl or benzyl, each optionally substituted on the phenyl ring with C₁-C₃ alkyl, halogen, cyano or nitro; R⁷ is H, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₁-C₆ alkoxy, C₁-C₆ haloalkoxy, halogen, cyano or nitro; R⁸ is H, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₃-C₆ cycloalkyl or C₃-C₆ halocycloalkyl; R⁹ is H, C₂-C₆ alkoxycarbonyl, C₂-C₆ haloalkoxycarbonyl, CO₂H or cyano; R¹⁰ is C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₃-C₆ cycloalkyl optionally substituted with 1-4 C₁-C₃ alkyl or C₃-C₆ halocycloalkyl; R¹¹ is cyano, C₂-C₆ alkoxycarbonyl, C₂-C₆ alkylcarbonyl, S(O)_nR¹³ or C(O)NR¹²R¹³; each R¹² is independently H or C₁-C₆ alkyl; R¹³ is C₁-C₆ alkyl or C₁-C₆ alkoxy; or R¹² and R¹³ can be taken together as -CH₂CH₂-, -CH₂CH₂CH₂-, -CH₂CH₂CH₂CH₂CH₂-, -CH₂CH₂CH₂CH₂CH₂- or -CH₂CH₂OCH₂CH₂-; R¹⁴ is H, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₂-C₆ alkoxyalkyl, formyl, C₂-C₆ alkylcarbonyl, C₂-C₆ alkoxycarbonyl, C(O)NR¹²R¹³, C₁-C₆ alkylsulfonyl or C₁-C₆ haloalkylsulfonyl; or R¹⁴ is phenyl, benzyl, benzoyl,

-CH₂C(O)phenyl or phenylsulfonyl, each optionally substituted on the phenyl ring with C₁-C₃ alkyl, halogen, cyano or nitro;

R¹⁵ is NR¹²R¹³, C₁-C₆ alkoxy, C₁-C₆ haloalkoxy, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₃-C₆ alkenyl, C₃-C₆ haloalkenyl, C₃-C₆ alkynyl, C₃-C₆ haloalkynyl or C₃-C₆ cycloalkyl; or R¹⁵ is phenyl optionally substituted with C₁-C₃ alkyl, C₁-C₃ haloalkyl, C₁-C₃ alkoxy, C₁-C₃ haloalkoxy, 1-2 halogen, cyano or nitro;

R¹⁶ is C₁-C₃ alkoxy, C₂-C₄ alkoxycarbonyl, C₁-C₃ alkylthio, C₁-C₃ alkylsulfinyl or C₁-C₃ alkylsulfonyl; or R¹⁶ is phenyl optionally substituted with C₁-C₃ alkyl, C₁-C₃ haloalkyl, C₁-C₃ alkoxy, C₁-C₃ haloalkoxy, 1-2 halogen, cyano or nitro;

m is 0, 1, 2 or 3;

n is 0, 1 or 2;

p is 0, 1, 2, 3 or 4;

r is 1, 2 or 3; and

t is 0 or 1;

provided that when W is CH and A is in the *meta* position with respect to the group Q-C(O)- of Formula I, then m is 3 and R¹ is other than H.

In the above recitations, the term "alkyl", used either alone or in compound words such as "alkylthio" or "haloalkyl" includes straight-chain or branched alkyl, such as, methyl, ethyl, *n*-propyl, *i*-propyl, or the different butyl, pentyl or hexyl isomers. The term "1-2 alkyl" indicates that one or two of the available positions for that substituent may be alkyl. "Alkenyl" includes straight-chain or branched alkenes such as 1-propenyl, 2-propenyl, and the different butenyl, pentenyl and hexenyl isomers.

"Alkenyl" also includes polyenes such as 1,2-propadienyl and 2,4-hexadienyl.

"Alkynyl" includes straight-chain or branched alkynes such as 1-propynyl, 2-propynyl and the different butynyl, pentynyl and hexynyl isomers. "Alkynyl" can also include moieties comprised of multiple triple bonds such as 2,5-hexadiynyl. "Alkoxy" includes, for example, methoxy, ethoxy, *n*-propyloxy, isopropyloxy and the different butoxy, pentoxy and hexyloxy isomers.

"Alkoxyalkyl" denotes alkoxy substitution on alkyl. Examples of "alkoxyalkyl" include CH₃OCH₂, CH₃OCH₂CH₂, CH₃CH₂OCH₂, CH₃CH₂CH₂CH₂OCH₂ and CH₃CH₂OCH₂CH₂. "Alkylthio" includes branched or straight-chain alkylthio moieties such as methylthio, ethylthio, and the different propylthio, butylthio, pentylthio and hexylthio isomers.

"Alkylsulfinyl" includes both enantiomers of an alkylsulfinyl group. Examples of "alkylsulfinyl" include CH₃S(O), CH₃CH₂S(O), CH₃CH₂CH₂S(O), (CH₃)₂CHS(O) and the different butylsulfinyl, pentylsulfinyl and hexylsulfinyl isomers. Examples of "alkylsulfonyl" include CH₃S(O)₂, CH₃CH₂S(O)₂, CH₃CH₂CH₂S(O)₂, (CH₃)₂CHS(O)₂ and the different

butylsulfonyl, pentylsulfonyl and hexylsulfonyl isomers. "Alkylamino", "dialkylamino", and the like, are defined analogously to the above examples. "Cycloalkyl" includes, for example, cyclopropyl, cyclobutyl, cyclopentyl, and cyclohexyl.

- 5 The term "halogen", either alone or in compound words such as "haloalkyl", includes fluorine, chlorine, bromine or iodine. Further, when used in compound words such as "haloalkyl", said alkyl may be partially or fully substituted with halogen atoms which may be the same or different. Examples of "haloalkyl" include F_3C , $ClCH_2$, CF_3CH_2 and CF_3CCl_2 . The terms "haloalkenyl", "haloalkynyl", "haloalkoxy", and the like, are defined analogously to the term "haloalkyl". Examples of "haloalkenyl" include $(Cl)_2C=CHCH_2$ and $CF_3CH_2CH=CHCH_2$. Examples of "haloalkynyl" include $HC\equiv CCHCl$, $CF_3C\equiv C$, $CCl_3C\equiv C$ and $FCH_2C\equiv CCH_2$. Examples of "haloalkoxy" include CF_3O , CCl_3CH_2O , $HCF_2CH_2CH_2O$ and CF_3CH_2O . Examples of "haloalkylthio" include CCl_3S , CF_3S , CCl_3CH_2S and $ClCH_2CH_2CH_2S$. Examples of
- 10 "haloalkylsulfonyl" include $CF_3S(O)_2$, $CCl_3S(O)_2$, $CF_3CH_2S(O)_2$ and $CF_3CF_2S(O)_2$.

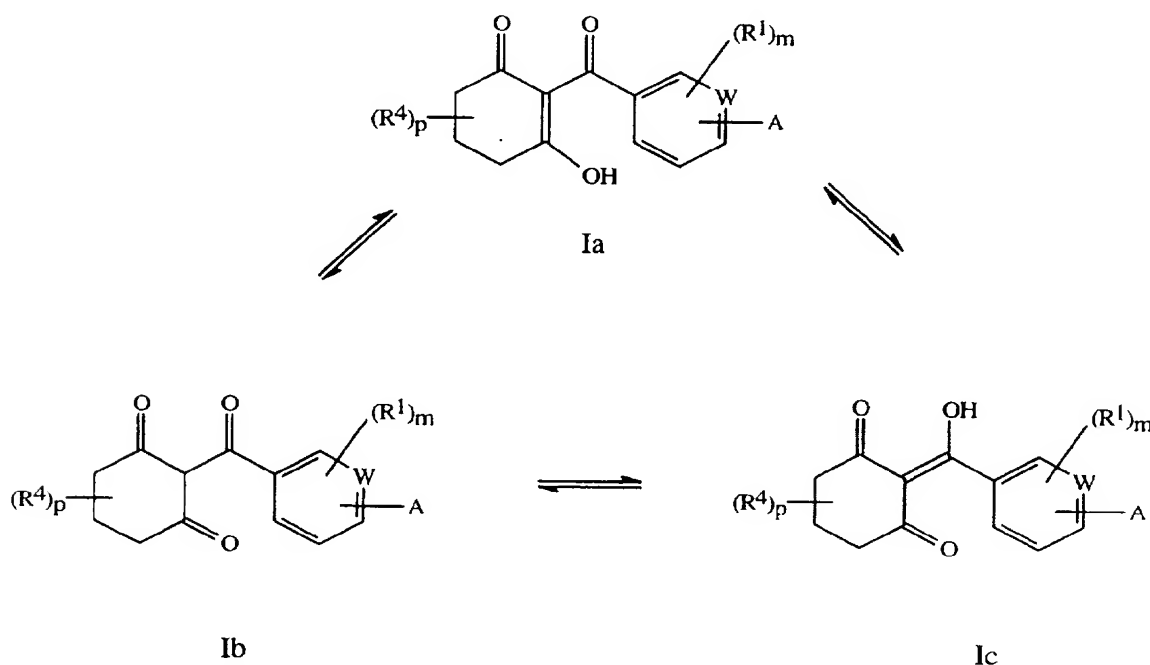
- The total number of carbon atoms in a substituent group is indicated by the " C_i-C_j " prefix where i and j are numbers from 1 to 6. For example, C_1-C_3 alkylsulfonyl designates methylsulfonyl through propylsulfonyl; C_2 alkoxyalkyl designates CH_3OCH_2 ; C_3 alkoxyalkyl designates, for example, $CH_3CH(OCH_3)$, $CH_3OCH_2CH_2$ or
- 20 $CH_3CH_2OCH_2$; and C_4 alkoxyalkyl designates the various isomers of an alkyl group substituted with an alkoxy group containing a total of four carbon atoms, examples including $CH_3CH_2CH_2OCH_2$ and $CH_3CH_2OCH_2CH_2$. Examples of "alkylcarbonyl" include $C(O)CH_3$, $C(O)CH_2CH_2CH_3$ and $C(O)CH(CH_3)_2$. Examples of "alkoxycarbonyl" include $CH_3OC(=O)$, $CH_3CH_2OC(=O)$, $CH_3CH_2CH_2OC(=O)$,
- 25 $(CH_3)_2CHOC(=O)$ and the different butoxy- or pentoxycarbonyl isomers. In the above recitations, when a compound of Formula I is comprised of one or more heterocyclic rings, all substituents are attached to these rings through any available carbon or nitrogen by replacement of a hydrogen on said carbon or nitrogen.

- When a group contains a substituent which can be hydrogen, for example R^1 or
- 30 R^{14} , then, when this substituent is taken as hydrogen, it is recognized that this is equivalent to said group being unsubstituted.

- Compounds of this invention can exist as one or more stereoisomers. The various stereoisomers include enantiomers, diastereomers, atropisomers and geometric isomers. One skilled in the art will appreciate that one stereoisomer may be more active and/or
- 35 may exhibit beneficial effects when enriched relative to the other stereoisomer(s) or when separated from the other stereoisomer(s). Additionally, the skilled artisan knows how to separate, enrich, and/or to selectively prepare said stereoisomers. Accordingly, the present invention comprises compounds selected from Formula I, *N*-oxides and

agriculturally suitable salts thereof. The compounds of the invention may be present as a mixture of stereoisomers, individual stereoisomers, or as an optically active form.

Some compounds of this invention can exist as one or more tautomers. One skilled in the art will recognize, for example, that compounds of Formula Ia (Formula I where Q is Q-1, R³ is OR¹⁴, and R¹⁴ is H) can also exist as the tautomers of Formulae Ib and Ic as shown below. One skilled in the art will recognize that said tautomers often exist in equilibrium with each other. As these tautomers interconvert under environmental and physiological conditions, they provide the same useful biological effects. The present invention includes mixtures of such tautomers as well as the individual tautomers of compounds of Formula I.



The salts of the compounds of the invention include acid-addition salts with inorganic or organic acids such as hydrobromic, hydrochloric, nitric, phosphoric, sulfuric, acetic, butyric, fumaric, lactic, maleic, malonic, oxalic, propionic, salicylic, tartaric, 4-toluenesulfonic or valeric acids. The salts of the compounds of the invention also include those formed with organic bases (e.g., pyridine, ammonia, or triethylamine) or inorganic bases (e.g., hydrides, hydroxides, or carbonates of sodium, potassium, lithium, calcium, magnesium or barium) when the compound contains an acidic group such as a carboxylic acid or enol. Preferred salts include the lithium, sodium, potassium, triethylammonium, and quaternary ammonium salts of the compounds of the invention.

Preferred compounds for reasons of better activity and/or ease of synthesis are:

Preferred 1. Compounds of Formula I, and *N*-oxides and agriculturally-suitable salts thereof, wherein:

A is selected from the group 1*H*-pyrrolyl; furanyl; thienyl; 1*H*-pyrazolyl;
1*H*-imidazolyl; isoxazolyl; oxazolyl; isothiazolyl; thiazolyl;
5 1*H*-1,2,3-triazolyl; 2*H*-1,2,3-triazolyl; 1*H*-1,2,4-triazolyl; 4*H*-1,2,4-triazolyl;
1,2,3-oxadiazolyl; 1,2,4-oxadiazolyl; 1,2,5-oxadiazolyl; 1,3,4-oxadiazolyl;
1,2,3-thiadiazolyl; 1,2,4-thiadiazolyl; 1,2,5-thiadiazolyl; 1,3,4-thiadiazolyl;
1*H*-tetrazolyl; 2*H*-tetrazolyl; pyridinyl; pyridazinyl; pyrimidinyl; pyrazinyl;
1,3,5-triazinyl; 1,2,4-triazinyl; and A may optionally be substituted by one to
10 three R², provided that when a nitrogen atom of a heterocyclic ring is
substituted with R², then R² is other than halogen;

Preferred 2. Compounds of Preferred 1 wherein:

Q is Q-1.

Preferred 3. Compounds of Preferred 2 wherein:

15 each R¹ is independently C₁-C₃ alkyl, C₁-C₃ alkoxy, halogen or nitro;
R³ is OR¹⁴; and
R¹⁴ is H or C₁-C₄ alkylsulfonyl; or R¹⁴ is benzoyl or phenylsulfonyl,
each optionally substituted with C₁-C₃ alkyl, halogen, cyano or
nitro.

20 Preferred 4. Compounds of Preferred 3 wherein:

A is pyridinyl, pyridazinyl, pyrimidinyl or 1*H*-pyrazolyl;
R² is -(Y)_t-S(O)_nR¹⁵, CF₃, OCF₃, OCF₂H or cyano;
R¹⁵ is C₁-C₆ alkyl;
t is 0; and
25 n is 2.

Preferred 5. Compounds of Preferred 1 wherein:

Q is Q-2;

Preferred 6. Compounds of Preferred 5 wherein:

30 each R¹ is independently C₁-C₃ alkyl, C₁-C₃ alkoxy, halogen or nitro;
R⁵ is OR¹⁴;
R¹⁴ is H or C₁-C₄ alkylsulfonyl; or R¹⁴ is benzoyl or phenylsulfonyl,
each optionally substituted with C₁-C₃ alkyl, halogen, cyano or
nitro.
R⁶ is H, C₁-C₆ alkyl, or C₃-C₆ alkenyl; and
35 R⁷ is H;

Preferred 7. Compounds of Preferred 6 wherein:

A is pyridinyl, pyridazinyl, pyrimidinyl or 1*H*-pyrazolyl;
R² is -(Y)_t-S(O)_nR¹⁵, CF₃, OCF₃, OCF₂H or cyano;

R^{15} is C_1 - C_6 alkyl;

t is 0; and

n is 2.

Preferred 8. Compounds of Preferred 1 wherein:

5 Q is Q -3.

Preferred 9. Compounds of Preferred 8 wherein:

each R^1 is independently C_1 - C_3 alkyl, C_1 - C_3 alkoxy, halogen or nitro;

R^8 is H, C_1 - C_3 alkyl, or cyclopropyl; and

R^9 is H or C_2 - C_3 alkoxycarbonyl.

10 Preferred 10. Compounds of Preferred 9 wherein:

A is pyridinyl, pyridazinyl, pyrimidinyl or 1*H*-pyrazolyl;

R^2 is $-(Y)_t-S(O)_nR^{15}$, CF_3 , OCF_3 , OCF_2H or cyano;

R^{15} is C_1 - C_6 alkyl;

t is 0; and

15 n is 2.

Preferred 11. Compounds of Preferred 1 wherein:

Q is Q -4.

Preferred 12. Compounds of Preferred 11 wherein:

each R^1 is independently C_1 - C_3 alkyl, C_1 - C_3 alkoxy, halogen or nitro;

20 R^{10} is C_3 - C_6 cycloalkyl or C_3 - C_6 halocycloalkyl, each optionally
substituted with 1-4 C_1 - C_3 alkyl; and

R^{11} is cyano or C_2 - C_6 alkoxycarbonyl.

Preferred 13. Compounds of Preferred 12 wherein:

A is pyridinyl, pyridazinyl, pyrimidinyl or 1*H*-pyrazolyl;

25 R^2 is $-(Y)_t-S(O)_nR^{15}$, CF_3 , OCF_3 , OCF_2H or cyano;

R^{15} is C_1 - C_6 alkyl;

t is 0; and

n is 2.

30 Most preferred are compounds of Formula Ia above, and sodium, potassium,
and quaternary ammonium salts thereof, selected from the group:

a) 3-hydroxy-2-[[6-(trifluoromethyl)[2,4'-bipyridin]-3-yl]carbonyl]-2-cyclohexen-1-one;

b) 2-[2-chloro-4-(4-pyridinyl)benzoyl]-3-hydroxy-2-cyclohexen-1-one; and

35 c) 2-[2,5-dimethyl-3-(1-methyl-1*H*-pyrazol-3-yl)-4-(methylsulfonyl)benzoyl]-
3-hydroxy-2-cyclohexen-1-one.

This invention also relates to herbicidal compositions comprising herbicidally effective amounts of the compounds of the invention and at least one of a surfactant, a

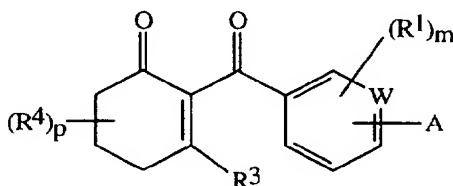
solid diluent or a liquid diluent. The preferred compositions of the present invention are those which comprise the above preferred compounds.

This invention also relates to a method for controlling undesired vegetation comprising applying to the locus of the vegetation herbicidally effective amounts of the compounds of the invention (e.g., as a composition described herein). The preferred methods of use are those involving the above preferred compounds.

DETAILS OF THE INVENTION

The compounds of Formula I can be prepared by one or more of the following methods and variations as described in Schemes 1-22. The definitions of W, Y, A, R¹-R¹⁶, m, n, p, r, and t in the compounds of Formulae 1-22 below are as defined above in the Summary of the Invention. Compounds of Formulae Ia-Ig are various subsets of the compounds of Formula I, and all substituents for Formulae Ia-Ig are as defined above for Formula I.

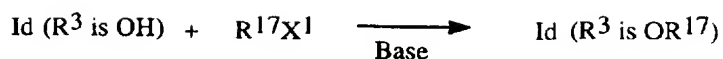
Compounds of General Formula Id can be readily prepared by one skilled in the art by using the reactions and techniques described in Schemes 1-14 of this section as well as by following the specific procedures given in Example 1.



Id

Scheme 1 illustrates the preparation of compounds of Formula Id (R^3 is OR^{17} and R^{17} is the same as R^{14} as described in the Summary of the Invention excluding H) whereby a compound of Formula Id (R^3 is OH) is reacted with a reagent of Formula 1 in the presence of a base wherein X^1 is chlorine, bromine, fluorine, trifluorosulfonyloxy (OTf) or acetyloxy (OAc) and R^{17} is as previously defined. The coupling is carried out by methods known in the art (or by slight modification of these methods): for example, see K. Nakamura, et al., WO 95/04054.

10
Scheme 1

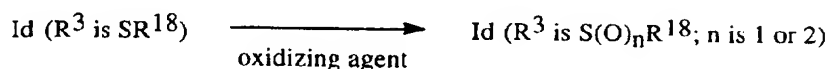


1

wherein R¹⁷ is the same as R¹⁴ as described
in the Summary of the Invention excluding H;
X¹ is chlorine, bromine, fluorine, trifluorosulfonyloxy
(OTf) or acetyloxy (OAc)

Scheme 2 illustrates the preparation of compounds of Formula Id (R³ is SO_nR¹⁸; n is 1 or 2; and R¹⁸ is C₁-C₆ alkyl or C₁-C₆ haloalkyl) whereby a compound of
5 Formula Id (R³ is SR¹⁸) is reacted with an oxidizing reagent such as peroxyacetic acid, *m*-chloroperoxybenzoic acid, potassium peroxymonosulfate (e.g., Oxone®, available from Aldrich Chemical Company), or hydrogen peroxide (the reaction may be buffered with a base such as sodium acetate or sodium carbonate). The oxidation is carried out by methods known in the art (or by slight modification of these methods): for example,
10 see B. M. Trost, et al., *J. Org. Chem.* (1988), 53, 532; B. M. Trost, et al., *Tetrahedron Lett.* (1981), 21, 1287; S. Patai, et al., *The Chemistry of Sulphones and Sulfoxides*, John Wiley & Sons, Protecting and deprotecting functional groups not compatible with the reaction condition may be necessary for compounds with such a functional group (for procedures, see T. W. Greene, et al., *Protective Groups in Organic Synthesis*,
15 Second Edition, John Wiley & Sons, Inc.).

Scheme 2



wherein R¹⁸ is C₁-C₆ alkyl or C₁-C₆ haloalkyl

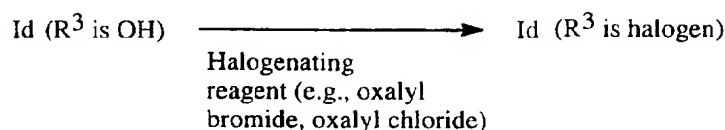
Compounds of Formula Id (R³ is Nu; Nu is SR¹⁸ or OR¹⁹; R¹⁸ is as defined
20 previously; R¹⁹ is C₁-C₆ alkyl, C₁-C₆ haloalkyl or C₂-C₆ alkoxyalkyl) can be prepared by one skilled in the art from a compound of Formula Id (R³ is halogen) by treatment with a nucleophile of Formula 2 (Nu is SR¹⁸ or OR¹⁹; M is Na, K or Li) as shown in Scheme 3 using methods well documented in the literature (or slight modification of these methods): for example, see S. Miyano, et al., *J. Chem. Soc., Perkin Trans. 1*
25 (1976), 1146.

11

Scheme 3

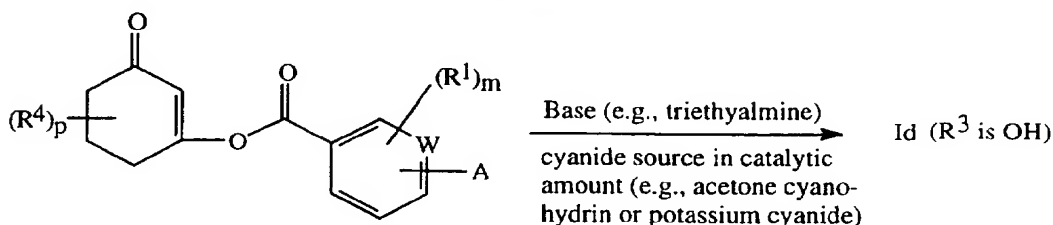
wherein Nu is SR¹⁸ or OR¹⁹; M is Na, K or Li;
and R¹⁹ is C₁-C₆ alkyl, C₁-C₆ haloalkyl or C₂-C₆
alkoxyalkyl

Compounds of Formula Id (R³ is halogen) can be prepared by reacting a
compound of Formula Id (R³ is OH) with a halogenating reagent such as oxalyl
5 bromide or oxalyl chloride (Scheme 4). This conversion is carried out by methods
known in the art (or by slight modification of these methods): for example see
S. Muller, et al., WO 94/13619; S. Muller, et al., DE 4,241,999.

Scheme 4

10

Scheme 5 illustrates the preparation of compounds of Formula Id (R³ is OH).
whereby an enol ester of Formula 3 is reacted with a base such as triethylamine in the
presence of a catalytic amount of cyanide source (e.g., acetone cyanohydrin or
potassium cyanide). This rearrangement is carried out by methods known in the art
15 (or by slight modification of these methods): for example see W. J. Michaely,
EP 369,803.

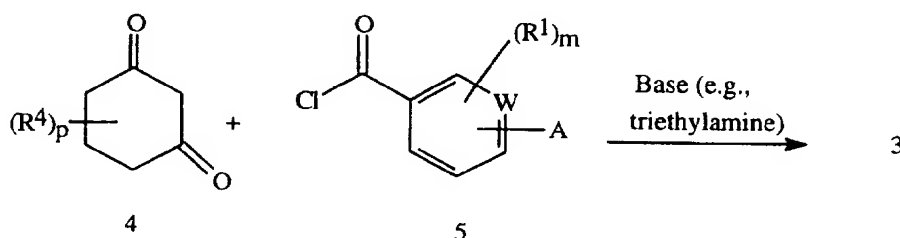
Scheme 5

3

Enol esters of Formula 3 can be prepared by reacting a dione of Formula 4 with an
20 acid chloride of Formula 5 in the presence of a slight mole excess of a base such as
triethylamine in an inert organic solvent such as acetonitrile, methylene chloride or

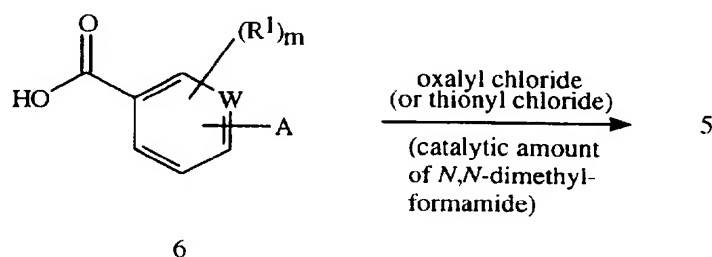
toluene at temperatures between 0 °C and 110 °C (Scheme 6). This type of coupling is known in the art: for example, see W. J. Michaely, EP 369,803.

Scheme 6



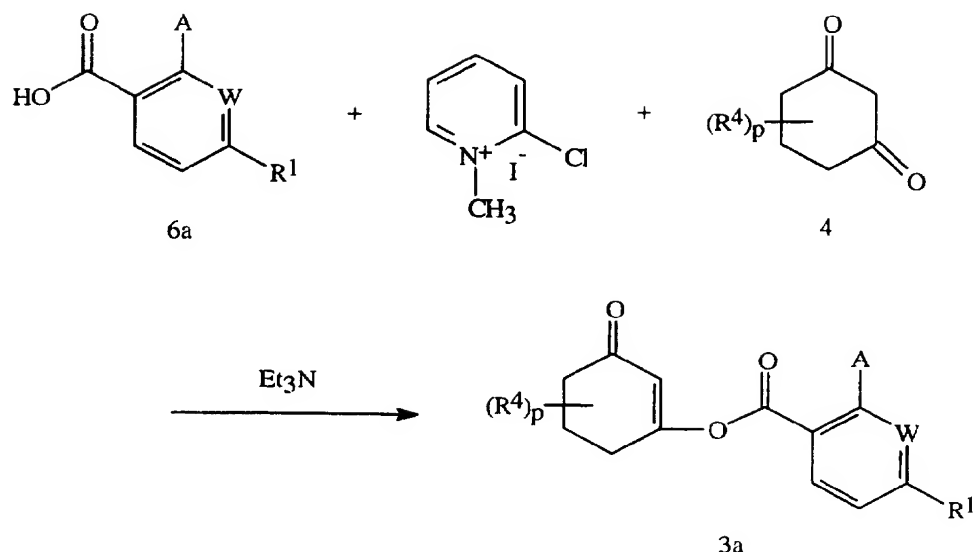
The acid chlorides of Formula 5 can be prepared by one skilled in the art by reacting an acid of Formula 6 with oxalyl chloride (or thionyl chloride) and a catalytic amount of dimethylformamide (Scheme 7). This chlorination is well known in the art: for example, see W. J. Michaely, EP 369,803.

Scheme 7

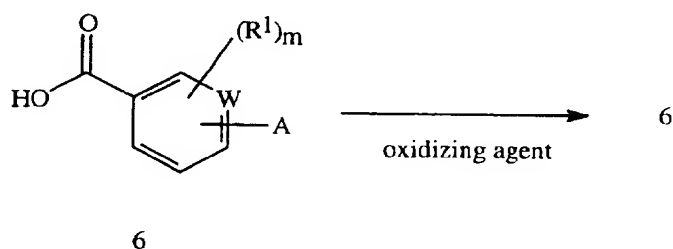


Enol esters of Formula 3a can also be prepared by directly reacting the acid of Formula 6a with *N*-methyl-2-chloropyridinium iodide, followed by treatment of the formed intermediate with the dione of Formula 4 in the presence of a base such as triethylamine (Scheme 8). This coupling is carried out by methods known in the art (or by slight modification of these methods): for example, see E. Haslam *Tetrahedron* (1980), 36, 2409-2433.

13

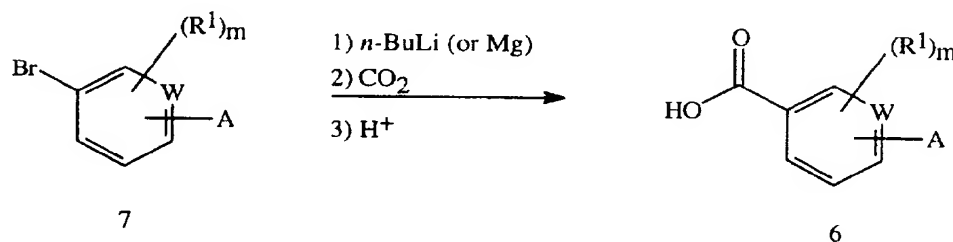
Scheme 8

Scheme 9 illustrates the preparation of acids of Formula 6 (R¹ is S(O)_nR¹⁵ and n is 1 or 2) whereby an acid of Formula 6 (R¹ is SR¹⁵) is reacted with an oxidizing reagent such as peroxyacetic acid, *m*-chloroperoxybenzoic acid, Oxone[®], or hydrogen peroxide (the reaction may be buffered with a base such as sodium acetate or sodium carbonate). The oxidation is carried out by methods known in the art (or by slight modification of these methods): for example, see B. M. Trost, et al., *J. Org. Chem.* (1988), 53, 532; B. M. Trost, et al., *Tetrahedron Lett.* (1981), 21, 1287; S. Patai, et al., *The Chemistry of Sulphones and Sulfoxides*, John Wiley & Sons. For some acids of Formula 6 (R¹ is SR¹⁵) with a functional group not compatible with the reaction conditions, the functional group may be protected before the oxidation and then be deprotected after the oxidation. The protecting and deprotecting procedures are well known in the literature: for example see T. W. Greene, et al., *Protective Groups in Organic Synthesis* (Second Edition), John Wiley & Sons, Inc.

Scheme 9wherein R¹ is S(O)_nR¹⁵ and n is 0wherein R¹ is S(O)_nR¹⁵ and n is 1 or 2

Scheme 10 illustrates the preparation of acids of Formula 6 (n is 0 if R^1 is $S(O)_n R^{15}$) whereby a phenyl bromide of Formula 7 (n is 0 if R^1 is $S(O)_n R^{15}$) is treated with n -butyllithium (or magnesium) and the lithium salt (or the Grignard reagent) generated *in situ* is then reacted with carbon dioxide followed by acidification with an acid such as hydrochloric acid. This conversion is carried out by methods known in the art (or by slight modification of these methods): for example, see M. A. Ogliaruso, et al., *Synthesis of Carboxylic Acids, Esters and Their Derivatives*, pp 27-28, John Wiley & Sons; A. J. Bridges, et al., *J. Org. Chem.* (1990), 55, 773; C. Franke, et al., *Angew. Chem. Int. Ed.* (1969), 8, 68. Protecting and deprotecting functional groups not compatible with the reaction conditions may be necessary for compounds with such a functional group.

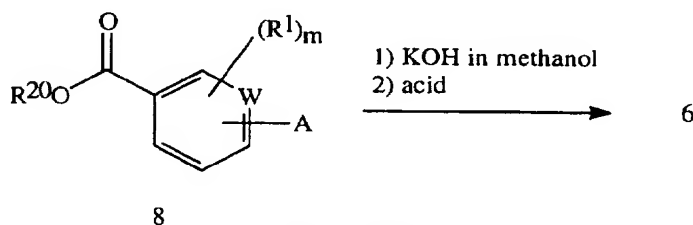
Scheme 10



wherein W is CH, and if R^1 is $S(O)_n R^{15}$, then n is 0

Many acids of Formula 6 can also be prepared, as shown in Scheme 11, whereby an ester of Formula 8 is saponified (for example, potassium hydroxide in methanol, then acidification with an acid such as hydrochloric acid), or, alternatively, hydrolyzed in acid (for example, 5N hydrochloric acid in acetic acid) by methods known in the art (or slight modification of these methods); see for example, M. A. Ogliaruso, et al., *Synthesis of Carboxylic Acids, Esters and Their Derivatives*, John Wiley & Sons, (1991), pages 5-7.

Scheme 11

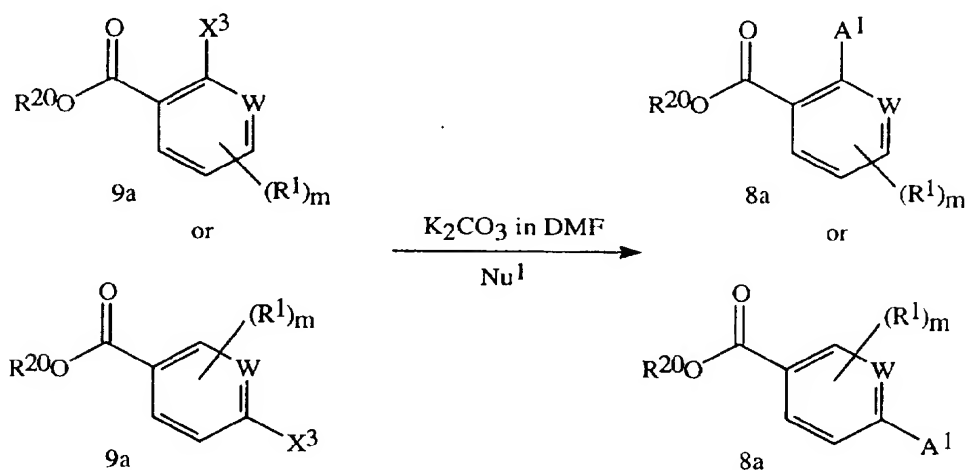


wherein R^{20} is CH_3 or CH_2CH_3

Esters of Formula 8 can be prepared using methods known in the art (or by slight modification of these methods): for example, see A. R. Katritzky, et al., *Comprehensive Heterocyclic Chemistry*, volumes 2-6, Pergamon Press.

5 Esters of Formula 8a or 8b can also be prepared as shown in Scheme 12, whereby an ester of Formula 9a or 9b is contacted with an appropriate nucleophilic heterocycle Nu¹ and a suitable base in an inert solvent. This reaction can be carried out by a variety of well-known methods, preferably with potassium carbonate or potassium *tert*-butoxide as the base with *N,N*-dimethylformamide as the solvent and at a reaction temperature range of from approximately 0 to 100 °C.

10

Scheme 12

wherein X³ is Cl, F or CF₃SO₂O;

Nu¹ is an imidazole, pyrazole or triazole

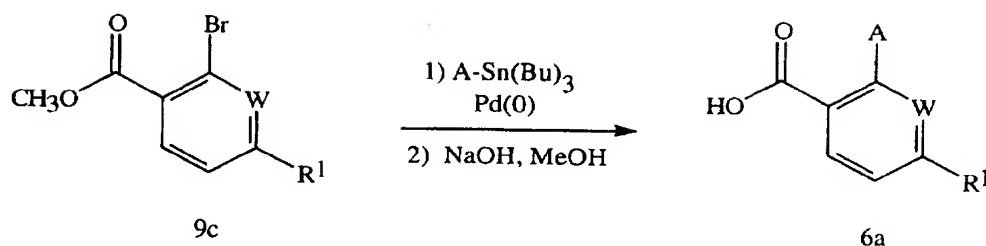
wherein A¹ is 1*H*-imidazole, 1*H*-pyrazole, 1*H*-1,2,4-triazole or 4*H*-1,2,4-triazole

Esters of Formula 9a and 9b are commercially available or can be prepared using methods known in the art (or by slight modification of these methods).

15 Scheme 13 illustrates the preparation of acids of Formula 6a whereby an aryl bromide of Formula 9c is treated with an aryl tin reagent in the presence of a palladium catalyst. This conversion is carried out by methods known in the art (or by slight modification of these methods): for example, see M. Fujita, et al., *Tetrahedron Letters*, (1995), 29, 5247-5250; Y. Yamamoto, et al., *Heterocycles*, (1996), 42, 189-194.

20 Saponification of the ester with a base such as sodium hydroxide provides the acids of Formula 6a.

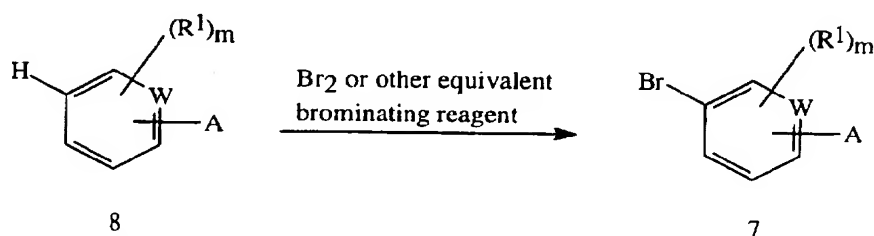
16

Scheme 13

Bromides of Formula 9c are either commercially available or can easily be prepared by methods known in the art (or by slight modification of these methods): for example, see T. Bryson, et al., *J. Org. Chem.*, (1976), 41, 2066; Andrea, T. A. and Liang, P. H., U.S. 5,393,734. Aryl and heteroaryl organotin compounds can be prepared by methods known in the art (or by slight modification of these methods): for example, see D. Peters, et al., *J. Heterocyclic Chem.*, (1990), 27, 2165.

Bromides of Formula 7 (n is 0 if R¹ is S(O)_nR¹⁵) can be prepared by one skilled in the art by using methods known in the art (or by slight modification of these methods): for example, see A. R. Katritzky, et al., *Comprehensive Heterocyclic Chemistry*, Volume 2-6, Pergamon Press; B. M. Lynch, et al., *Tet. Lett.* (1964), p. 617; M. A. Kahn, et al., *Rev. Latinoam. Quim.* (1972), 3, p. 119; M. Kosugi, et al., *Bull. Chem. Soc. Jpn.* (1986), 59 (2), p. 677.

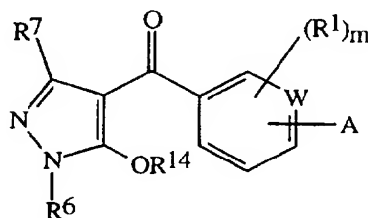
Alternatively some of the bromides of Formula 7 (n is 0 if R¹ is S(O)_nR¹⁵) can also be prepared by bromination of the corresponding substituted benzenes of Formula 8 (n is 0 if R¹ is S(O)_nR¹⁵) with the bromine or other equivalent reagent in an inert organic solvent as shown in Scheme 14. This bromination is carried out by general methods known in the art; see, for example, E. Campaigne, et al., *J. Heterocycl. Chem.* (1969), 6, p. 517; H. Gilman, *J. Am. Chem. Soc.* (1955), 77, p. 6059;

Scheme 14

The compounds of Formula 8 (n is 0 if R¹ is S(O)_nR¹⁵) can be prepared by one skilled in the art by using methods known in the art (or by slight modification of these methods): for example, see A. R. Katritzky, et. al., *Comprehensive Heterocyclic Chemistry*, Volume 2-6, Pergamon Press; B. M. Lynch, et al., *Tet. Lett.* (1964), p. 617;

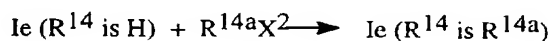
M. A. Kahn, et al., *Rev. Latinoam. Quim.* (1972), 3, p. 119; M. Kosugi, et al., *Bull. Chem. Soc. Jpn.* (1986), 59, (2), p. 677.

Compounds of General Formula Ie can be readily prepared by one skilled in the art by using the reactions and techniques described in Schemes 15-17 of this section.



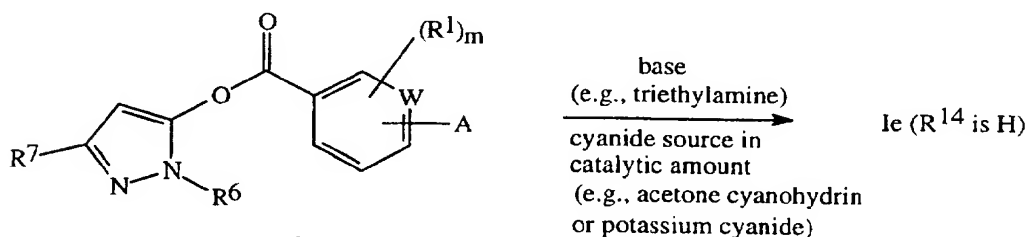
Ie

Scheme 15 illustrates the preparation of compounds of Formula Ie (R^{14} is R^{14a} and R^{14a} is the same as R^{14} as described in the Summary of the Invention excluding H) whereby a compound of Formula Ie (R^{14} is H) is reacted with a reagent of Formula 9 in the presence of a base wherein X^2 is chlorine, bromine, fluorine, OTf or OAc and R^{14a} is as previously defined. This coupling is carried out by methods known in the art (or by slight modification of these methods): for example, see K. Nakamura, et al., WO 95/04054.

Scheme 15

9

Scheme 16 illustrates the preparation of compounds of Formula Ie (R^{14} is H), whereby an ester of Formula 10 is reacted with a base such as triethylamine in the presence of a catalytic amount of cyanide source (e.g., acetone cyanohydrin or potassium cyanide). This rearrangement is carried out by methods known in the art (or by slight modification of these methods): for example, see W. J. Michaely, EP 369,803.

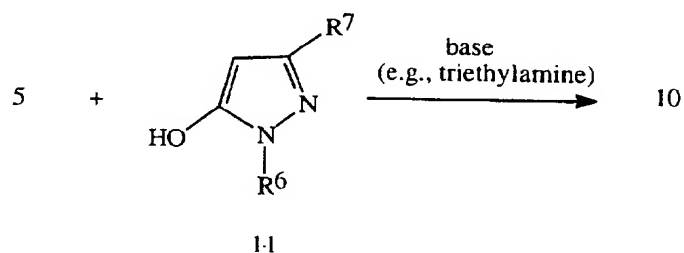
Scheme 16

10

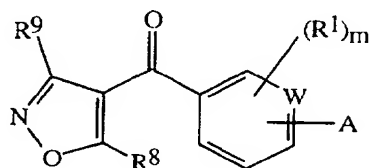
18

Esters of Formula 10 can be prepared by reacting a hydroxypyrazole of Formula 11 with an acid chloride of Formula 5 in the presence of a slight mole excess of a base such as triethylamine in an inert organic solvent such as acetonitrile, methylene chloride or toluene at temperatures between 0 °C and 110 °C (Scheme 17).

5 This type of coupling is carried out by methods known in the art (or by slight modification of these methods): for example, see W. J. Michaely, EP 369,803.

Scheme 17

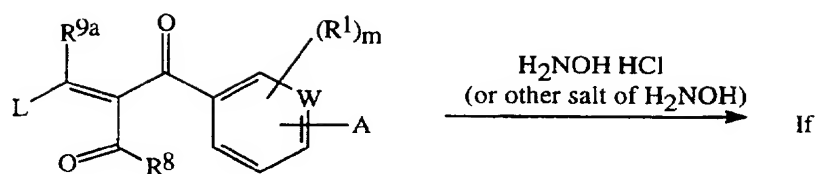
10 Compounds of General Formula If can be readily prepared by one skilled in the art by using the reactions and techniques described in Schemes 18-21 of this section.



Scheme 18 illustrates the preparation of compounds of Formula If whereby a compound of Formula 12 is reacted with a salt of hydroxylamine such as hydroxylamine hydrochloride in the presence of a base or acid acceptor such as triethylamine or sodium acetate. The substituents of the immediate products may be further modified if appropriate. This cyclization is carried out by methods known in the art (or by slight modification of these methods): for example, see P. A. Cain, et al., EP 560,483; C. J. Pearson, et al., EP 636,622.

20

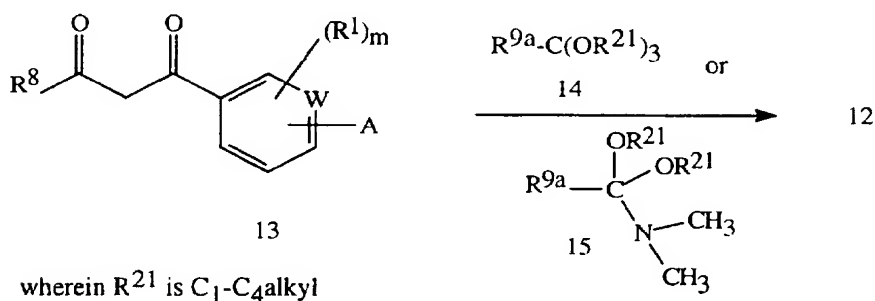
19

Scheme 18

wherein

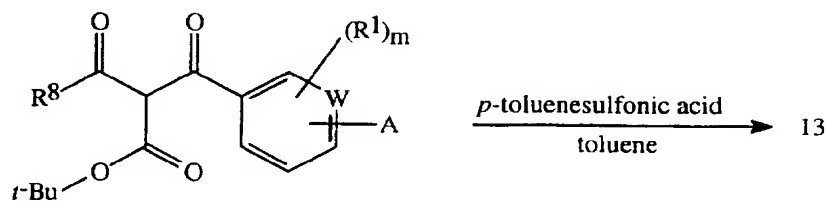
L is a leaving group such as C₁-C₄alkoxy (e.g. OC₂H₅)
 or *N,N*-dialkylamino (e.g. dimethyl amino)
 R^{9a} is R⁹ or CONH₂

Scheme 19 illustrates the preparation of compounds of Formula 12 whereby a compound of Formula 13 is reacted with a reagent of Formula 14 or Formula 15. This conversion is carried out by methods known in the art (or by slight modification of these methods): for example, see P. A. Cain, et al., EP 560,483; C. J. Pearson, et al., EP 636,622.

Scheme 19

wherein R²¹ is C₁-C₄alkyl

Scheme 20 illustrates the preparation of compounds of Formula 13 whereby an ester of Formula 16 is decarboxylated in the presence of a catalyst, such as *p*-toluenesulfonic acid, in an inert solvent such as toluene. This conversion is carried out by methods known in the art (or by slight modification of these methods): for example, see P. A. Cain, et al., EP 560,483; C. J. Pearson, et al., EP 636,622.

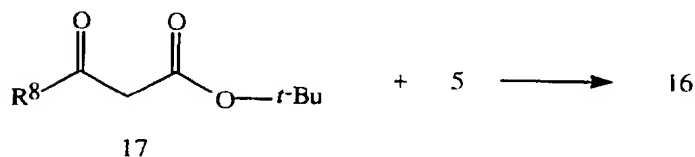
Scheme 20

15

16

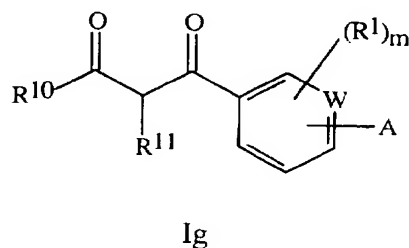
Esters of Formula 16 can be prepared by reacting the metal salt of a compound of Formula 17 with an acid chloride of Formula 5 (Scheme 21). This type of coupling is known in the art: for example see P. A. Cain, et al., EP 560,483; C. J. Pearson, et al., EP 636,622.

5

Scheme 21

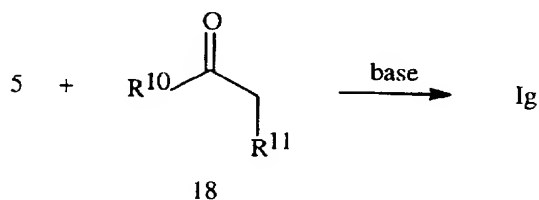
Scheme 22 illustrates the preparation of compounds of Formula Ig whereby a compound of Formula 5 is reacted with a compound of Formula 18 in the presence of a base such as triethylamine, potassium carbonate, sodium hydride or $Mg(OEt)_2$ in an inert organic solvent such as diethyl ether, tetrahydrofuran, *N,N*-dimethylformamide, dichloromethane or acetonitrile.

10



15

This conversion is carried out by methods known in the art (or slight modification of these methods); for example, see J. W. Ashmore, EP 213,892 and P. A. Cain, EP 496,631 A1.

Scheme 22

20

It is recognized that some reagents and reaction conditions described above for preparing compounds of Formula I may not be compatible with certain functionalities present in the intermediates. In these instances, the incorporation of protection/deprotection sequences or functional group interconversions into the

synthesis will aid in obtaining the desired products. The use and choice of the protecting groups will be apparent to one skilled in chemical synthesis (see, for example, Greene, T. W.; Wuts, P. G. M. *Protective Groups in Organic Synthesis*, 2nd ed.; Wiley: New York, 1991). One skilled in the art will recognize that, in some cases, after the introduction of a given reagent as it is depicted in any individual scheme, it may be necessary to perform additional routine synthetic steps not described in detail to complete the synthesis of compounds of Formula I. One skilled in the art will also recognize that it may be necessary to perform a combination of the steps illustrated in the above schemes in an order other than that implied by the particular sequence presented to prepare the compounds of Formula I.

One skilled in the art will also recognize that compounds of Formula I and the intermediates described herein can be subjected to various electrophilic, nucleophilic, radical, organometallic, oxidation, and reduction reactions to add substituents or modify existing substituents.

Without further elaboration, it is believed that one skilled in the art using the preceding description can utilize the present invention to its fullest extent. The following Examples are, therefore, to be construed as merely illustrative, and not limiting of the disclosure in any way whatsoever. Percentages are by weight except for chromatographic solvent mixtures or where otherwise indicated. Parts and percentages for chromatographic solvent mixtures are by volume unless otherwise indicated. ¹H NMR spectra are reported in ppm downfield from tetramethylsilane; s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet, dd = doublet of doublets, dt = doublet of triplets, br s = broad singlet.

EXAMPLE 1

Step A: Preparation of 3-[(2,5-dimethylphenyl)thio]propanoic acid

43.4 g (1.086 mol) of sodium hydroxide was added to 230 mL of water, 75.0 g (0.543 mol) of 2,5-dimethylthiophenol (purchased from Aldrich Chemical Company) was then added and the mixture was cooled to about 10 °C. 91.30 g (0.597 mol) of 3-bromopropionic acid (purchased from Aldrich Chemical Company) was added in portions keeping the temperature below 25 °C. The mixture was warmed to room temperature, stirred for 2 hr under nitrogen, and was then washed with diethyl ether (3 x 500 mL). The aqueous layer was acidified with 1N HCl and filtered to yield 112.79 g of the title compound of step A as a solid, m.p. 97-98 °C.

¹H NMR (CDCl₃): δ 2.3 (s, 3H), 2.34 (s, 3H), 2.68 (t, 2H), 3.1 (t, 2H), 6.9 (d, 1H), 7.06-7.14 (2H).

Step B: Preparation of 2,3-dihydro-5,8-dimethyl-4H-1-benzopyran-4-one

530 mL of concentrated sulfuric acid was added to 24.91 g (0.119 mol) of the title compound of step A while being cooled with an acetone/ice bath. The ice bath was

removed, the mixture was stirred for 1 hr and was then poured over crushed ice. The aqueous phase was extracted with a mixture of diethyl ether : hexane (1:9, 6 x 500 mL), dried (MgSO₄), filtered, and evaporated to dryness to yield 11.75 g of the title compound of step B as an oil.

5 ¹H NMR (CDCl₃): δ 2.3 (s, 3H), 2.6 (s, 3H), 2.97 (m, 2H), 3.2 (m, 2H), 6.9-7.1 (2H).

Step C: Preparation of 6-bromo-2,3-dihydro-5,8-dimethyl-4H-1-benzothiopyran-4-one

A solution of 4.07 g (0.021 mol) of the title compound of step B in 25 mL of methylene chloride was added dropwise to a mixture of 7.07 g (0.053 mol) of aluminum chloride (purchased from Aldrich Chemical Company) in 25 mL of methylene chloride. The suspension was stirred for approximately 15 minutes, 1.14 mL (0.022 mol) of bromine (purchased from Janssen) was added dropwise, and the mixture was then refluxed for 10 minutes. The warm mixture was poured into 10 mL of concentrated hydrochloric acid containing 75 g of ice, stirred for 10 minutes, diluted with 50 mL of water, and extracted with diethyl ether (2 x 200 mL). The combined organic layers were washed with water (2 x 200 mL), dried (Na₂SO₄), filtered, and evaporated to dryness. The crude product was chromatographed over silica gel eluting with a mixture of ethyl acetate : hexane (5:95) to yield 2.62 g of the title compound of step C as a solid, m.p. 87-88 °C.

20 ¹H NMR (CDCl₃): δ 2.3 (s, 3H), 2.6 (s, 3H), 3.0 (m, 2H), 3.2 (m, 2H), 7.45 (s, 1H).

Step D: Preparation of 6-bromo-5,8-dimethyl-4H-1-benzothiopyran-4-one

30 g (0.11 mol) of the title compound of step C and 8.95 mL (0.11 mol) of pyridine were added to 250 mL of methylene chloride. The solution was cooled to about 0 °C and 14.76 g (0.11 mol) of N-chlorosuccinimide was added. The mixture was stirred overnight under nitrogen while warming to room temperature and then refluxed for 12 h. The reaction was evaporated to dryness, the residue was stirred in diethyl ether, and filtered. The filtrate was dried (MgSO₄), filtered, and evaporated to dryness to yield 13.25 g of the title compound of step D as a solid, m.p. 123-124 °C.

30 ¹H NMR (CDCl₃): δ 2.5 (s, 3H), 2.9 (s, 3H), 7.0 (d, 1H), 7.7 (m, 2H).

Step E: Preparation of 3-[3-bromo-2,5-dimethyl-6-(methylthio)phenyl]-1-methyl-1H-pyrazole

13.25 g (0.049 mol) of the title compound of step D and 2.88 mL (0.054 mol) of methylhydrazine (purchased from Aldrich Chemical Company) was added to 150 mL of absolute ethanol. After stirring at reflux under nitrogen for 5 hr the mixture was allowed to warm to room temperature and stir for 2.5 days. The mixture was refluxed for 3 hr after which time 0.5 mL of acetic acid was added and the reaction was refluxed

overnight. After cooling to room temperature, 12.35 mL (0.054 mol) of sodium methoxide (25% in methanol) and 3.66 mL (0.059 mol) of iodomethane were added and the reaction stirred for 2 hr. The mixture was evaporated to dryness. The residue was stirred in water, extracted with methylene chloride (250 mL), dried (MgSO₄), filtered, and evaporated to dryness. The crude product was chromatographed over silica gel eluting with methylene chloride to yield 5.97 g of the title compound of step E as an oil.

¹H NMR (CDCl₃): δ 2.0 (s, 3H), 2.1 (s, 3H), 2.5 (s, 3H), 3.6 (s, 3H), 6.2 (s, 1H), 7.6 (m, 2H).

Step F: Preparation of 2,5-dimethyl-3-(1-methyl-1H-pyrazol-3-yl)-4-(methylthio)benzoic acid

5.9 g (0.019 mol) of the title compound of step E was added to 100 mL of tetrahydrofuran and cooled to -70 °C. 9.1 mL (0.023 mol) of 2.5M *n*-butyllithium (purchased from Aldrich Chemical Company) was added dropwise keeping the temperature below -65 °C. Solid carbon dioxide was added in one portion and the mixture warmed to room temperature. 200 mL of hexane was added and the mixture was filtered. The solid collected was added to water and acidified to about pH 1 with concentrated hydrochloric acid. The aqueous was extracted with methylene chloride (3 x 100 mL), dried (MgSO₄), filtered, and evaporated to dryness to yield 3.13 g of the title compound of step F as a semi-solid.

¹H NMR (CDCl₃): δ 2.1 (s, 3H), 2.3 (s, 3H), 2.6 (s, 3H), 3.6 (s, 3H), 6.2 (m, 1H), 7.6 (d, 1H), 7.97 (s, 1H).

Step G: Preparation of 2,5-dimethyl-3-(1-methyl-1H-pyrazol-3-yl)-4-(methylsulfonyl)benzoic acid

4.5 mL (0.046 mol) of hydrogen peroxide (35%) was added to 25 mL of trifluoroacetic acid. The mixture was allowed to stir for 30 min under nitrogen and was then cooled to 0 °C. A solution of 3.1 g (0.011 mol) of the title compound of step F in 25 mL of trifluoroacetic acid was added dropwise keeping the temperature below 10 °C. The mixture was warmed to room temperature and stirred for 3 days. 2 mL of dimethylsulfide was added and the reaction stirred for 30 min. The mixture was then evaporated to dryness, and the residue was triturated with water and filtered. The collected solid was dissolved in methylene chloride, dried (MgSO₄), filtered, and evaporated to dryness to yield 1.41 g of the title compound of step G as a solid, m.p. 60†°C (dec.).

¹H NMR (CDCl₃): δ 2.2 (s, 3H), 2.8 (s, 3H), 3.0 (s, 3H), 3.7 (s, 3H), 6.2 (m, 1H), 7.7 (m, 1H), 8.0 (s, 1H).

Step H: Preparation of 3-oxo-1-cyclohexen-1-yl 2,5-dimethyl-3-(1-methyl-1H-pyrazol-3-yl)-4-(methylsulfonyl)benzoate

1.39 g (0.0045 mol) of the title compound of step G, 1.18 mL (0.0135 mol) of oxalyl chloride (purchased from Janssen), and 2 drops of N,N-dimethylformamide were added to 50 mL of methylene chloride. The mixture was refluxed under nitrogen for 2.5 hr and was then evaporated to dryness. 50 mL of methylene chloride was added to the residue and the solution was again evaporated to dryness. Another 50 mL of methylene chloride was added to the residue, and the solution was cooled to about 0 °C. 0.56 g (0.0049 mol) of 1,3-cyclohexanedione (purchased from Aldrich Chemical Company) was added followed by 1.94 mL (0.0139 mol) of triethylamine, and the mixture was stirred overnight while warming to room temperature. The mixture was evaporated to dryness and the crude product was chromatographed over silica gel eluting with a mixture of ethyl acetate:hexane (6:4, then 7:3) to yield 0.47 g of the title compound of step H as a solid, m.p. 165 - 167 °C.

¹H NMR (CDCl₃): δ 2.1 - 2.2 (m, 5H), 2.5 (m, 2H), 2.7 (m, 2H), 2.8 (s, 3H), 2.98 (s, 3H), 3.6 (s, 3H), 6.0 (s, 1H), 6.1 (m, 1H), 7.6 (m, 1H), 7.9 (s, 1H).

Step I: Preparation of 2-[2,5-dimethyl-3-(1-methyl-1H-pyrazol-3-yl)-4-(methylsulfonyl)benzoyl]-1,3-cyclohexanedione

0.47 g (0.0012 mol) of the title compound of step H, 1 drop of acetone cyanohydrin (purchased from Aldrich Chemical Company), and 0.29 mL (0.0020 mol) of triethylamine were added to 25 mL of acetonitrile and allowed to stir overnight at room temperature under nitrogen. The mixture was evaporated to dryness, water was added to the residue, and the solution was acidified to pH 1 with concentrated hydrochloric acid. The aqueous was extracted with methylene chloride, dried (MgSO₄), filtered, and evaporated to dryness to yield 0.27 g of the title compound of example 1, a compound of the invention, as a solid, m.p. 93 °C (decomposed).

¹H NMR (CDCl₃): δ 1.8 (s, 3H), 2.1 (m, 2H), 2.4 (m, 2H), 2.7 (s, 3H), 2.8 (m, 2H), 2.98 (s, 3H), 3.7 (s, 3H), 6.2 (s, 1H), 7.1 (s, 1H), 7.6 (s, 1H).

EXAMPLE 2

Step A: Preparation of 2-[3-(trifluoromethyl)-1H-pyrazol-1-yl]benzoic acid

To 100 mL of dimethylformamide was added sequentially 19.3 g (0.125 mol) of methyl 2-fluorobenzoate, 18.7 g (0.138 mol) of 3-(trifluoromethyl)pyrazole (purchased from Maybridge Chemical Company), and 19.0 g (0.138 mol) of potassium carbonate. The suspension was stirred and heated at about 100 °C for 16 hours, then cooled to 25 °C and poured into excess water. The aqueous suspension was extracted three times with 75 mL of diethyl ether and the combined ether layers were dried over magnesium sulfate and concentrated under reduced pressure. The residual oil was chromatographed over silica gel eluting with hexane:ethyl acetate (9.6:0.4, then 100% ethyl acetate) to

yield 15.3 g of crude methyl 2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]benzoate as an oil. 14 g (0.052 mol) of this oil was added to a solution of 3.8 g (0.057 mol) of potassium hydroxide (85%) dissolved in 60 mL of methanol. The solution was stirred at 25 °C for one hour, refluxed for 5 hours, stirred at 25 °C for 48 hours, and finally concentrated under reduced pressure. 100 mL of water was added to the residue and the cloudy solution was extracted twice with 40 mL of diethyl ether. The clear aqueous layer was acidified with concentrated HCl and filtered. The collected solid was dissolved in dichloromethane, dried over magnesium sulfate, and the solvent was removed under reduced pressure to yield 5.0 g of the title compound of Step A as a solid melting at 138-144 °C.

¹H NMR (CDCl₃): δ 6.95 (d, 1H), 7.65 (m, 2H), 7.7 (m, 1H), 7.85 (m, 1H), 8.35 (d, 1H), 13.15 (s, 1H).

Step B: Preparation of 3-oxo-1-cyclohexen-1-yl 2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]benzoate

To 20 mL of oxalyl chloride was added portionwise 4.0 g of the title compound of Step A. The suspension was refluxed for about 3 hours and then concentrated under reduced pressure. The residue was azeotroped with dichloromethane (two times with 20 mL at 60 °C) to yield an oil which solidified upon cooling and melted at 64-68 °C. 2.0 g (0.0073 mol) of this acid chloride was added to 20 mL of dichloromethane, followed by the addition of 0.99 g (0.0088 mol) of 1,3-cyclohexanedione, and 2.2 g (0.022 mol) of triethylamine. The suspension was stirred overnight and then concentrated under reduced pressure. The residue was dissolved in diethyl ether and the solution was then extracted with water, dried over magnesium sulfate, and concentrated under reduced pressure to yield 2.0 g of the title compound of Step B as an oil.

¹H NMR (CDCl₃): δ 2.0 (m, 2H), 2.35 (m, 2H), 2.5 (m, 2H), 5.85 (s, 1H), 6.75 (d, 1H), 7.5 (m, 1H), 7.6 (m, 1H), 7.7 (m, 1H), 7.8 (d, 1H), 8.0 (m, 1H).

Step C: Preparation of 3-hydroxy-2-[2-[3-(trifluoromethyl)-1*H*-pyrazol-1-yl]benzoyl]-2-cyclohexen-1-one

To 20 mL of acetonitrile was added sequentially 1.8 g (0.005 mol) of the title compound of Step B, 1.0 g (0.01 mol) of triethylamine, and 8 drops of acetone cyanohydrin. The solution was stirred under a nitrogen atmosphere at 25 °C overnight, and then diluted with 40 mL of water and acidified by the addition of concentrated hydrochloric acid (red to litmus paper). The suspension was filtered, and the collected solid was washed three times with 20 mL of water, suction dried, and then recrystallized from 2-propanol to yield 0.97 g of the title compound of Step C, a compound of this invention, as a solid melting at 141-143 °C.

¹H NMR (CDCl₃): δ 1.8 (m, 2H), 2.1 (m, 2H), 2.6 (m, 2H), 6.6 (d, 1H), 7.4-7.6 (m, 4H), 7.75 (d, 1H), 16.6 (s, 1H).

EXAMPLE 3Step A: Preparation of methyl 6-(trifluoromethyl)[2,4'-bipyridine]-3-carboxylate

To a stirred solution of 8.49 g (0.03 mol) of methyl 2-bromo-6-(trifluoromethyl)-3-pyridine carboxylate (prepared as described by Andrea T. A. and Liang P. H., U.S. Patent 5,393,734) in 25 mL of *N,N*-dimethylformamide under a nitrogen atmosphere was added 0.5 g of tetrakis(triphenylphosphine)palladium(0) and the mixture was heated at 100 °C for 30 minutes. 11 g (0.03 mol) of 4-tributylstannylpyridine (prepared by a modification of the procedure described by A. Lee and W. Dai, *Tetrahedron Letters* (1996), 37, 495-498) was added and heating was continued at 100 °C for 24 hours. The reaction mixture was cooled to room temperature and *N,N*-dimethylformamide was removed by distillation under high vacuum. The residue was purified by flash chromatography over silica gel utilizing dichloromethane:ethyl acetate (8:2) to provide 4.0 g of the title compound of Step A as a red oil.

¹H NMR (CDCl₃): δ 8.76 (d, 2H), 8.4 (d, 1H), 7.8 (d, 1H), 7.47 (m, 2H), 3.76 (s, 3H).

Step B: Preparation of 6-(trifluoromethyl)[2,4'-bipyridine]-3-carboxylic acid

To a solution of 1.7 g of the title compound of Step A in 20 mL of methanol was added 2 mL of 50% aqueous sodium hydroxide and the reaction was stirred at room temperature for 24 hours. The mixture was concentrated and acidified with 6*N* aqueous hydrochloric acid to pH 3 and extracted three times with 20 mL of ethyl acetate. The combined organic layers were dried over magnesium sulfate and concentrated under reduced pressure to provide 1.6 g of title compound of Step B as a crude solid.

¹H NMR (CD₃)₂SO): δ 9.02 (d, 2H), 8.26 (d, 1H), 8.22 (m, 1H), 8.14 (d, 2H).

Step C: Preparation of 3-oxo-1-cyclohexen-1-yl 6-(trifluoromethyl)[2,4'-bipyridine]-3-carboxylate

To a suspension of 1.6 g (6 mmol) of the title compound of Step B in 100 mL of dichloromethane was added 0.78 g (7 mmol) of 1,3-cyclohexanedione followed by 2.4 mL (16 mmol) of triethylamine and 1.8 g (7 mmol) of 2-chloro-1-methylpyridinium iodide. The mixture was stirred at room temperature under nitrogen for 24 hours and then applied directly to a silica gel column and purified by flash chromatography using ethyl acetate/dichloromethane (2:8) to afford 1.34 g of the title compound of Step C as a tan solid melting at 49-56 °C.

¹H NMR (CDCl₃): δ 8.78 (d, 2H), 8.6 (d, 1H), 7.51 (d, 2H), 5.93 (s, 1H), 2.2 (m, 2H), 2.1 (m, 2H), 2.0 (m, 2H).

Step D: Preparation of 3-hydroxy-2-[[6-(trifluoromethyl)[2,4'-bipyridin]-3-yl]carbonyl]-2-cyclohexen-1-one

To a solution of 1.22 g (3.5 mmol) of the title compound of Step C in 25 mL of acetonitrile was added 1.16 mL (8.36 mmol) of triethylamine, followed by 2 drops of

acetonecyanohydrin. The mixture was stirred under nitrogen for 18 hours. The mixture was then concentrated under reduced pressure, and the residual oil was acidified with aqueous 1*N* hydrochloric acid and extracted three times with 20 mL of dichloromethane. The combined organic layers were dried over magnesium sulfate and concentrated under reduced pressure to afford 0.4 g of the title compound of Step D, a compound of this invention, as a white solid melting at 137-145 °C.

¹H NMR (CDCl₃): δ 8.66 (m, 2H), 7.79 (m, 2H), 7.45 (m, 2H), 2.8 (m, 2H), 2.0 (m, 2H), 1.8 (m, 2H).

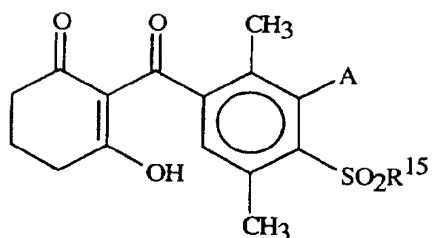
By the procedures described herein together with methods known in the art, the following compounds of Tables 1 to 20 can be prepared. The following abbreviations are used in the Tables which follow: NO₂ = nitro and Ph = phenyl.

The following notations have been used in Tables 1-20:

A-1 = (1-methyl-1 <i>H</i> -pyrazol-3-yl)-	A-26 = (1-methyl-1 <i>H</i> -imidazol-4-yl)-
A-2 = (1-ethyl-1 <i>H</i> -pyrazol-3-yl)-	A-27 = (1-methyl-1 <i>H</i> -imidazol-5-yl)-
A-3 = (1-propyl-1 <i>H</i> -pyrazol-3-yl)-	A-28 = (4-methyl-2-oxazolyl)-
A-4 = (1 <i>H</i> -pyrazol-3-yl)-	A-29 = (5-methyl-2-oxazolyl)-
A-5 = (1,5-dimethyl-1 <i>H</i> -pyrazol-3-yl)-	A-30 = (2-oxazolyl)-
A-6 = (4-chloro-1-methyl-1 <i>H</i> -pyrazol-3-yl)-	A-31 = (2-methyl-5-oxazolyl)-
A-7 = (1 <i>H</i> -pyrazol-1-yl)-	A-32 = (2-methyl-4-oxazolyl)-
A-8 = (3-methyl-1 <i>H</i> -pyrazol-1-yl)-	A-33 = (4-methyl-2-thiazolyl)-
A-9 = (3,5-dimethyl-1 <i>H</i> -pyrazol-1-yl)-	A-34 = (5-methyl-2-thiazolyl)-
A-10 = (3-isoxazolyl)-	A-35 = (2-thiazolyl)-
A-11 = (5-methyl-3-isoxazolyl)-	A-36 = (2-methyl-5-thiazolyl)-
A-12 = (3-methyl-5-isoxazolyl)-	A-37 = (2-methyl-4-thiazolyl)-
A-13 = (5-isoxazolyl)-	A-38 = (3-methyl-4-isothiazolyl)-
A-14 = (1 <i>H</i> -pyrrol-2-yl)-	A-39 = (3-methyl-5-isothiazolyl)-
A-15 = (1-methyl-1 <i>H</i> -pyrrol-2-yl)-	A-40 = (5-methyl-3-isothiazolyl)-
A-16 = (1 <i>H</i> -pyrrol-1-yl)-	A-41 = (1-methyl-1 <i>H</i> -1,2,3-triazol-4-yl)-
A-17 = (1-methyl-1 <i>H</i> -pyrrol-3-yl)-	A-42 = (2-methyl-2 <i>H</i> -1,2,3-triazol-4-yl)-
A-18 = (2-furanyl)-	A-43 = (4-methyl-2 <i>H</i> -1,2,3-triazol-2-yl)-
A-19 = (5-methyl-2-furanyl)-	A-44 = (1-methyl-1 <i>H</i> -1,2,4-triazol-3-yl)-
A-20 = (3-furanyl)-	A-45 = (1,5-dimethyl-1 <i>H</i> -1,2,4-triazol-3-yl)-
A-21 = (5-methyl-2-thienyl)-	A-46 = (3-methyl-1 <i>H</i> -1,2,4-triazol-1-yl)-
A-22 = (2-thienyl)-	A-47 = (5-methyl-1 <i>H</i> -1,2,4-triazol-1-yl)-
A-23 = (3-thienyl)-	A-48 = (4,5-dimethyl-4 <i>H</i> -1,2,4-triazol-3-yl)-
A-24 = (1-methyl-1 <i>H</i> -imidazol-2-yl)-	A-49 = (4-methyl-4 <i>H</i> -1,2,4-triazol-3-yl)-
A-25 = (1 <i>H</i> -imidazol-2-yl)-	A-50 = (4 <i>H</i> -1,2,4-triazol-4-yl)-

- A-51 = (5-methyl-1,2,3-oxadiazol-4-yl)-
A-52 = (1,2,3-oxadiazol-4-yl)-
A-53 = (3-methyl-1,2,4-oxadiazol-5-yl)-
A-54 = (5-methyl-1,2,4-oxadiazol-3-yl)-
A-55 = (4-methyl-3-furazanyl)-
A-56 = (3-furazanyl)-
A-57 = (5-methyl-1,3,4-oxadiazol-2-yl)-
A-58 = (5-methyl-1,2,3-thiadiazol-4-yl)-
A-59 = (1,2,3-thiadiazol-4-yl)-
A-60 = (3-methyl-1,2,4-thiadiazol-5-yl)-
A-61 = (5-methyl-1,2,4-thiadiazol-3-yl)-
A-62 = (4-methyl-1,2,5-thiadiazol-3-yl)-
A-63 = (5-methyl-1,3,4-thiadiazol-2-yl)-
A-64 = (1-methyl-1*H*-tetrazol-5-yl)-
A-65 = (1*H*-tetrazol-5-yl)-
A-66 = (5-methyl-1*H*-tetrazol-1-yl)-
A-67 = (2-methyl-2*H*-tetrazol-5-yl)-
A-68 = (2-ethyl-2*H*-tetrazol-5-yl)-
A-69 = (5-methyl-2*H*-tetrazol-2-yl)-
A-70 = (2*H*-tetrazol-2-yl)-
A-71 = (2-pyridinyl)-
A-72 = (6-methyl-2-pyridinyl)-
A-73 = (4-pyridinyl)-
A-74 = (3-pyridinyl)-
A-75 = (6-methyl-3-pyridazinyl)-
A-76 = (5-methyl-3-pyridazinyl)-
A-77 = (3-pyridazinyl)-
A-78 = (4,6-dimethyl-2-pyrimidinyl)-
A-79 = (4-methyl-2-pyrimidinyl)-
A-80 = (2-pyrimidinyl)-
A-81 = (2-methyl-4-pyrimidinyl)-
A-82 = (2-chloro-4-pyrimidinyl)-
A-83 = (2,6-dimethyl-4-pyrimidinyl)-
A-84 = (4-pyrimidinyl)-
A-85 = (2-methyl-5-pyrimidinyl)-
A-86 = (6-methyl-2-pyrazinyl)-
A-87 = (2-pyrazinyl)-
A-88 = (4,6-dimethyl-1,3,5-triazin-2-yl)-
A-89 = (4,6-dichloro-1,3,5-triazin-2-yl)-
A-90 = (1,3,5-triazin-2-yl)-
A-91 = (4-methyl-1,3,5-triazin-2-yl)-
A-92 = (3-methyl-1,2,4-triazin-5-yl)-
A-93 = (3-methyl-1,2,4-triazin-6-yl)-

TABLE 1

 R^{15} is CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

 R^{15} is CH_2CH_3

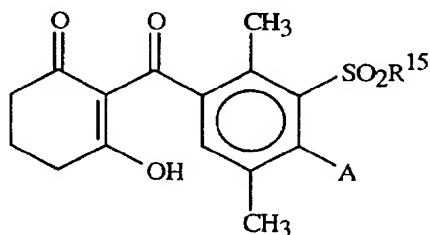
<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

 R^{15} is $\text{CH}_2\text{CH}_2\text{CH}_3$

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60

A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

TABLE 2

R¹⁵ is CH₃

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

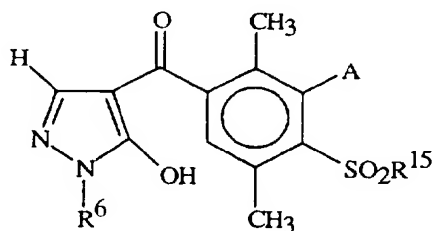
R¹⁵ is CH₂CH₃

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{15} is $CH_2CH_2CH_3$

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

TABLE 3

 R^{15} is CH_3 and R^6 is CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

 R^{15} is CH_2CH_3 and R^6 is CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48

A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{15} is $CH_2CH_2CH_3$ and R^6 is CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{15} is CH_3 and R^6 is CH_2CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

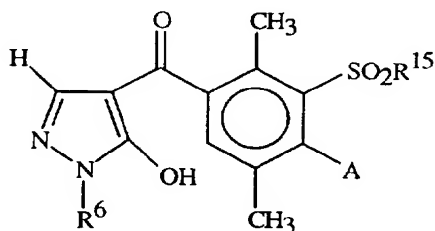
R^{15} is CH_2CH_3 and R^6 is CH_2CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{15} is $CH_2CH_2CH_3$ and R^6 is CH_2CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

TABLE 4



R^{15} is CH_3 and R^6 is CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{15} is CH_2CH_3 and R^6 is CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48

A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{15} is $CH_2CH_2CH_3$ and R^6 is CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{15} is CH_3 and R^6 is CH_2CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

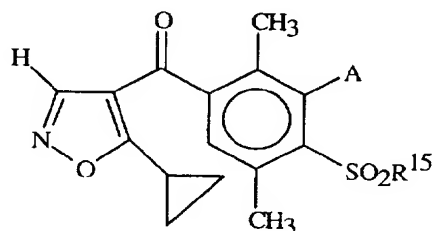
R^{15} is CH_2CH_3 and R^6 is CH_2CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{15} is $CH_2CH_2CH_3$ and R^6 is CH_2CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

TABLE 5



R^{15} is CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{15} is CH_2CH_3

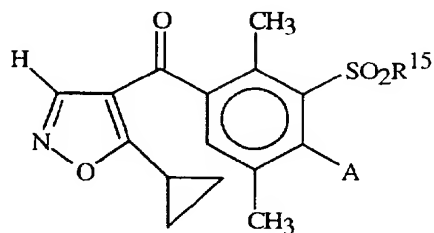
<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48

A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{15} is $CH_2CH_2CH_3$

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

TABLE 6



R^{15} is CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

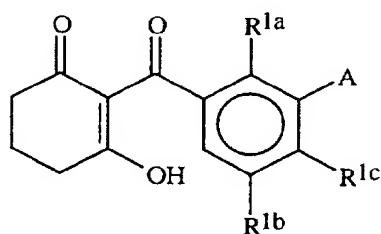
R^{15} is CH_2CH_3

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

 R^{15} is $CH_2CH_2CH_3$

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

TABLE 7



<u>A</u>	<u>R^{1c}</u>	<u>R^{1a}</u>	<u>R^{1b}</u>	<u>A</u>	<u>R^{1c}</u>	<u>R^{1a}</u>	<u>R^{1b}</u>
A-1	SO ₂ CH ₃	NO ₂	CH ₃	A-2	SO ₂ CH ₃	NO ₂	CH ₃
A-1	SO ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₃	Cl	Cl
A-1	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₂ CH ₃	Cl	Cl

A-1	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-1	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-2	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-1	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-2	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-1	SO ₂ N(CH ₃) ₂	Cl	Cl	A-2	SO ₂ N(CH ₃) ₂	Cl	Cl
A-1	SO ₂ CF ₃	CH ₃	CH ₃	A-2	SO ₂ CF ₃	CH ₃	CH ₃
A-1	SO ₂ CF ₃	Cl	CH ₃	A-2	SO ₂ CF ₃	Cl	CH ₃
A-1	SO ₂ CF ₃	Cl	Cl	A-2	SO ₂ CF ₃	Cl	Cl
A-1	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-2	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-1	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-2	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-1	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-2	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-1	CF ₃	CH ₃	CH ₃	A-2	CF ₃	CH ₃	CH ₃
A-1	CF ₃	Cl	CH ₃	A-2	CF ₃	Cl	CH ₃
A-1	CF ₃	Cl	Cl	A-2	CF ₃	Cl	Cl
A-1	OCH ₃	CH ₃	CH ₃	A-2	OCH ₃	CH ₃	CH ₃
A-1	OCH ₃	Cl	CH ₃	A-2	OCH ₃	Cl	CH ₃
A-1	OCH ₃	Cl	Cl	A-2	OCH ₃	Cl	Cl
A-1	NO ₂	CH ₃	CH ₃	A-2	NO ₂	CH ₃	CH ₃
A-1	NO ₂	Cl	CH ₃	A-2	NO ₂	Cl	CH ₃
A-1	NO ₂	Cl	Cl	A-2	NO ₂	Cl	Cl
A-5	SO ₂ CH ₃	NO ₂	CH ₃	A-7	SO ₂ CH ₃	NO ₂	CH ₃
A-5	SO ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₃	Cl	Cl
A-5	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₂ CH ₃	Cl	Cl
A-5	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-5	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-7	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-5	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-7	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-5	SO ₂ N(CH ₃) ₂	Cl	Cl	A-7	SO ₂ N(CH ₃) ₂	Cl	Cl
A-5	SO ₂ CF ₃	CH ₃	CH ₃	A-7	SO ₂ CF ₃	CH ₃	CH ₃
A-5	SO ₂ CF ₃	Cl	CH ₃	A-7	SO ₂ CF ₃	Cl	CH ₃
A-5	SO ₂ CF ₃	Cl	Cl	A-7	SO ₂ CF ₃	Cl	Cl
A-5	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-7	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-5	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-7	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-5	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-7	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-5	CF ₃	CH ₃	CH ₃	A-7	CF ₃	CH ₃	CH ₃
A-5	CF ₃	Cl	CH ₃	A-7	CF ₃	Cl	CH ₃

A-5	CF ₃	Cl	Cl	A-7	CF ₃	Cl	Cl
A-5	OCH ₃	CH ₃	CH ₃	A-7	OCH ₃	CH ₃	CH ₃
A-5	OCH ₃	Cl	CH ₃	A-7	OCH ₃	Cl	CH ₃
A-5	OCH ₃	Cl	Cl	A-7	OCH ₃	Cl	Cl
A-5	NO ₂	CH ₃	CH ₃	A-7	NO ₂	CH ₃	CH ₃
A-5	NO ₂	Cl	CH ₃	A-7	NO ₂	Cl	CH ₃
A-5	NO ₂	Cl	Cl	A-7	NO ₂	Cl	Cl
A-8	SO ₂ CH ₃	NO ₂	CH ₃	A-9	SO ₂ CH ₃	NO ₂	CH ₃
A-8	SO ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₃	Cl	CH ₃
A-8	SO ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₃	Cl	Cl
A-8	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-8	SO ₂ CH ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₂ CH ₃	Cl	Cl
A-8	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-8	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-8	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-9	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-8	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-9	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-8	SO ₂ N(CH ₃) ₂	Cl	Cl	A-9	SO ₂ N(CH ₃) ₂	Cl	Cl
A-8	SO ₂ CF ₃	CH ₃	CH ₃	A-9	SO ₂ CF ₃	CH ₃	CH ₃
A-8	SO ₂ CF ₃	Cl	CH ₃	A-9	SO ₂ CF ₃	Cl	CH ₃
A-8	SO ₂ CF ₃	Cl	Cl	A-9	SO ₂ CF ₃	Cl	Cl
A-8	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-9	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-8	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-9	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-8	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-9	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-8	CF ₃	CH ₃	CH ₃	A-9	CF ₃	CH ₃	CH ₃
A-8	CF ₃	Cl	CH ₃	A-9	CF ₃	Cl	CH ₃
A-8	CF ₃	Cl	Cl	A-9	CF ₃	Cl	Cl
A-8	OCH ₃	CH ₃	CH ₃	A-9	OCH ₃	CH ₃	CH ₃
A-8	OCH ₃	Cl	CH ₃	A-9	OCH ₃	Cl	CH ₃
A-8	OCH ₃	Cl	Cl	A-9	OCH ₃	Cl	Cl
A-8	NO ₂	CH ₃	CH ₃	A-9	NO ₂	CH ₃	CH ₃
A-8	NO ₂	Cl	CH ₃	A-9	NO ₂	Cl	CH ₃
A-8	NO ₂	Cl	Cl	A-9	NO ₂	Cl	Cl
A-24	SO ₂ CH ₃	NO ₂	CH ₃	A-33	SO ₂ CH ₃	NO ₂	CH ₃
A-24	SO ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₃	Cl	CH ₃
A-24	SO ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₃	Cl	Cl
A-24	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-24	SO ₂ CH ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₂ CH ₃	Cl	Cl
A-24	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃

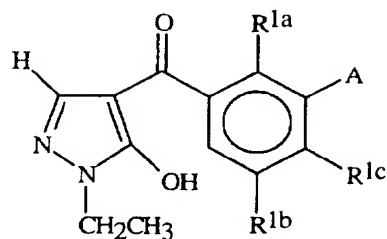
A-24	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-24	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-33	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-24	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-33	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-24	SO ₂ N(CH ₃) ₂	Cl	Cl	A-33	SO ₂ N(CH ₃) ₂	Cl	Cl
A-24	SO ₂ CF ₃	CH ₃	CH ₃	A-33	SO ₂ CF ₃	CH ₃	CH ₃
A-24	SO ₂ CF ₃	Cl	CH ₃	A-33	SO ₂ CF ₃	Cl	CH ₃
A-24	SO ₂ CF ₃	Cl	Cl	A-33	SO ₂ CF ₃	Cl	Cl
A-24	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-33	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-24	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-33	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-24	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-33	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-24	CF ₃	CH ₃	CH ₃	A-33	CF ₃	CH ₃	CH ₃
A-24	CF ₃	Cl	CH ₃	A-33	CF ₃	Cl	CH ₃
A-24	CF ₃	Cl	Cl	A-33	CF ₃	Cl	Cl
A-24	OCH ₃	CH ₃	CH ₃	A-33	OCH ₃	CH ₃	CH ₃
A-24	OCH ₃	Cl	CH ₃	A-33	OCH ₃	Cl	CH ₃
A-24	OCH ₃	Cl	Cl	A-33	OCH ₃	Cl	Cl
A-24	NO ₂	CH ₃	CH ₃	A-33	NO ₂	CH ₃	CH ₃
A-24	NO ₂	Cl	CH ₃	A-33	NO ₂	Cl	CH ₃
A-24	NO ₂	Cl	Cl	A-33	NO ₂	Cl	Cl
A-42	SO ₂ CH ₃	NO ₂	CH ₃	A-44	SO ₂ CH ₃	NO ₂	CH ₃
A-42	SO ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₃	Cl	Cl
A-42	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₂ CH ₃	Cl	Cl
A-42	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-42	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-44	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-42	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-44	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-42	SO ₂ N(CH ₃) ₂	Cl	Cl	A-44	SO ₂ N(CH ₃) ₂	Cl	Cl
A-42	SO ₂ CF ₃	CH ₃	CH ₃	A-44	SO ₂ CF ₃	CH ₃	CH ₃
A-42	SO ₂ CF ₃	Cl	CH ₃	A-44	SO ₂ CF ₃	Cl	CH ₃
A-42	SO ₂ CF ₃	Cl	Cl	A-44	SO ₂ CF ₃	Cl	Cl
A-42	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-44	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-42	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-44	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-42	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-44	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-42	CF ₃	CH ₃	CH ₃	A-44	CF ₃	CH ₃	CH ₃
A-42	CF ₃	Cl	CH ₃	A-44	CF ₃	Cl	CH ₃
A-42	CF ₃	Cl	Cl	A-44	CF ₃	Cl	Cl

A-42	OCH ₃	CH ₃	CH ₃	A-44	OCH ₃	CH ₃	CH ₃
A-42	OCH ₃	Cl	CH ₃	A-44	OCH ₃	Cl	CH ₃
A-42	OCH ₃	Cl	Cl	A-44	OCH ₃	Cl	Cl
A-42	NO ₂	CH ₃	CH ₃	A-44	NO ₂	CH ₃	CH ₃
A-42	NO ₂	Cl	CH ₃	A-44	NO ₂	Cl	CH ₃
A-42	NO ₂	Cl	Cl	A-44	NO ₂	Cl	Cl
A-45	SO ₂ CH ₃	NO ₂	CH ₃	A-67	SO ₂ CH ₃	NO ₂	CH ₃
A-45	SO ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₃	Cl	Cl
A-45	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₂ CH ₃	Cl	Cl
A-45	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-45	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-67	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-45	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-67	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-45	SO ₂ N(CH ₃) ₂	Cl	Cl	A-67	SO ₂ N(CH ₃) ₂	Cl	Cl
A-45	SO ₂ CF ₃	CH ₃	CH ₃	A-67	SO ₂ CF ₃	CH ₃	CH ₃
A-45	SO ₂ CF ₃	Cl	CH ₃	A-67	SO ₂ CF ₃	Cl	CH ₃
A-45	SO ₂ CF ₃	Cl	Cl	A-67	SO ₂ CF ₃	Cl	Cl
A-45	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-67	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-45	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-67	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-45	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-67	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-45	CF ₃	CH ₃	CH ₃	A-67	CF ₃	CH ₃	CH ₃
A-45	CF ₃	Cl	CH ₃	A-67	CF ₃	Cl	CH ₃
A-45	CF ₃	Cl	Cl	A-67	CF ₃	Cl	Cl
A-45	OCH ₃	CH ₃	CH ₃	A-67	OCH ₃	CH ₃	CH ₃
A-45	OCH ₃	Cl	CH ₃	A-67	OCH ₃	Cl	CH ₃
A-45	OCH ₃	Cl	Cl	A-67	OCH ₃	Cl	Cl
A-45	NO ₂	CH ₃	CH ₃	A-67	NO ₂	CH ₃	CH ₃
A-45	NO ₂	Cl	CH ₃	A-67	NO ₂	Cl	CH ₃
A-45	NO ₂	Cl	Cl	A-67	NO ₂	Cl	Cl
A-68	SO ₂ CH ₃	NO ₂	CH ₃	A-71	SO ₂ CH ₃	NO ₂	CH ₃
A-68	SO ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₃	Cl	Cl
A-68	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₂ CH ₃	Cl	Cl
A-68	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl

A-68	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-71	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-68	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-71	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-68	SO ₂ N(CH ₃) ₂	Cl	Cl	A-71	SO ₂ N(CH ₃) ₂	Cl	Cl
A-68	SO ₂ CF ₃	CH ₃	CH ₃	A-71	SO ₂ CF ₃	CH ₃	CH ₃
A-68	SO ₂ CF ₃	Cl	CH ₃	A-71	SO ₂ CF ₃	Cl	CH ₃
A-68	SO ₂ CF ₃	Cl	Cl	A-71	SO ₂ CF ₃	Cl	Cl
A-68	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-71	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-68	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-71	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-68	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-71	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-68	CF ₃	CH ₃	CH ₃	A-71	CF ₃	CH ₃	CH ₃
A-68	CF ₃	Cl	CH ₃	A-71	CF ₃	Cl	CH ₃
A-68	CF ₃	Cl	Cl	A-71	CF ₃	Cl	Cl
A-68	OCH ₃	CH ₃	CH ₃	A-71	OCH ₃	CH ₃	CH ₃
A-68	OCH ₃	Cl	CH ₃	A-71	OCH ₃	Cl	CH ₃
A-68	OCH ₃	Cl	Cl	A-71	OCH ₃	Cl	Cl
A-68	NO ₂	CH ₃	CH ₃	A-71	NO ₂	CH ₃	CH ₃
A-68	NO ₂	Cl	CH ₃	A-71	NO ₂	Cl	CH ₃
A-68	NO ₂	Cl	Cl	A-71	NO ₂	Cl	Cl
A-78	SO ₂ CH ₃	NO ₂	CH ₃	A-91	SO ₂ CH ₃	NO ₂	CH ₃
A-78	SO ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₃	Cl	Cl
A-78	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₂ CH ₃	Cl	Cl
A-78	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-78	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-91	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-78	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-91	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-78	SO ₂ N(CH ₃) ₂	Cl	Cl	A-91	SO ₂ N(CH ₃) ₂	Cl	Cl
A-78	SO ₂ CF ₃	CH ₃	CH ₃	A-91	SO ₂ CF ₃	CH ₃	CH ₃
A-78	SO ₂ CF ₃	Cl	CH ₃	A-91	SO ₂ CF ₃	Cl	CH ₃
A-78	SO ₂ CF ₃	Cl	Cl	A-91	SO ₂ CF ₃	Cl	Cl
A-78	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-91	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-78	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-91	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-78	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-91	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-78	CF ₃	CH ₃	CH ₃	A-91	CF ₃	CH ₃	CH ₃
A-78	CF ₃	Cl	CH ₃	A-91	CF ₃	Cl	CH ₃
A-78	CF ₃	Cl	Cl	A-91	CF ₃	Cl	Cl
A-78	OCH ₃	CH ₃	CH ₃	A-91	OCH ₃	CH ₃	CH ₃

A-78	OCH ₃	Cl	CH ₃	A-91	OCH ₃	Cl	CH ₃
A-78	OCH ₃	Cl	Cl	A-91	OCH ₃	Cl	Cl
A-78	NO ₂	CH ₃	CH ₃	A-91	NO ₂	CH ₃	CH ₃
A-78	NO ₂	Cl	CH ₃	A-91	NO ₂	Cl	CH ₃
A-78	NO ₂	Cl	Cl	A-91	NO ₂	Cl	Cl

TABLE 8



<u>A</u>	<u>R^{1c}</u>	<u>R^{1a}</u>	<u>R^{1b}</u>	<u>A</u>	<u>R^{1c}</u>	<u>R^{1a}</u>	<u>R^{1b}</u>
A-1	SO ₂ CH ₃	NO ₂	CH ₃	A-2	SO ₂ CH ₃	NO ₂	CH ₃
A-1	SO ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₃	Cl	Cl
A-1	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₂ CH ₃	Cl	Cl
A-1	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-1	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-2	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-1	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-2	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-1	SO ₂ N(CH ₃) ₂	Cl	Cl	A-2	SO ₂ N(CH ₃) ₂	Cl	Cl
A-1	SO ₂ CF ₃	CH ₃	CH ₃	A-2	SO ₂ CF ₃	CH ₃	CH ₃
A-1	SO ₂ CF ₃	Cl	CH ₃	A-2	SO ₂ CF ₃	Cl	CH ₃
A-1	SO ₂ CF ₃	Cl	Cl	A-2	SO ₂ CF ₃	Cl	Cl
A-1	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-2	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-1	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-2	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-1	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-2	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-1	CF ₃	CH ₃	CH ₃	A-2	CF ₃	CH ₃	CH ₃
A-1	CF ₃	Cl	CH ₃	A-2	CF ₃	Cl	CH ₃
A-1	CF ₃	Cl	Cl	A-2	CF ₃	Cl	Cl
A-1	OCH ₃	CH ₃	CH ₃	A-2	OCH ₃	CH ₃	CH ₃
A-1	OCH ₃	Cl	CH ₃	A-2	OCH ₃	Cl	CH ₃
A-1	OCH ₃	Cl	Cl	A-2	OCH ₃	Cl	Cl

A-1	NO ₂	CH ₃	CH ₃	A-2	NO ₂	CH ₃	CH ₃
A-1	NO ₂	Cl	CH ₃	A-2	NO ₂	Cl	CH ₃
A-1	NO ₂	Cl	Cl	A-2	NO ₂	Cl	Cl
A-5	SO ₂ CH ₃	NO ₂	CH ₃	A-7	SO ₂ CH ₃	NO ₂	CH ₃
A-5	SO ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₃	Cl	Cl
A-5	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₂ CH ₃	Cl	Cl
A-5	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-5	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-7	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-5	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-7	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-5	SO ₂ N(CH ₃) ₂	Cl	Cl	A-7	SO ₂ N(CH ₃) ₂	Cl	Cl
A-5	SO ₂ CF ₃	CH ₃	CH ₃	A-7	SO ₂ CF ₃	CH ₃	CH ₃
A-5	SO ₂ CF ₃	Cl	CH ₃	A-7	SO ₂ CF ₃	Cl	CH ₃
A-5	SO ₂ CF ₃	Cl	Cl	A-7	SO ₂ CF ₃	Cl	Cl
A-5	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-7	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-5	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-7	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-5	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-7	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-5	CF ₃	CH ₃	CH ₃	A-7	CF ₃	CH ₃	CH ₃
A-5	CF ₃	Cl	CH ₃	A-7	CF ₃	Cl	CH ₃
A-5	CF ₃	Cl	Cl	A-7	CF ₃	Cl	Cl
A-5	OCH ₃	CH ₃	CH ₃	A-7	OCH ₃	CH ₃	CH ₃
A-5	OCH ₃	Cl	CH ₃	A-7	OCH ₃	Cl	CH ₃
A-5	OCH ₃	Cl	Cl	A-7	OCH ₃	Cl	Cl
A-5	NO ₂	CH ₃	CH ₃	A-7	NO ₂	CH ₃	CH ₃
A-5	NO ₂	Cl	CH ₃	A-7	NO ₂	Cl	CH ₃
A-5	NO ₂	Cl	Cl	A-7	NO ₂	Cl	Cl
A-8	SO ₂ CH ₃	NO ₂	CH ₃	A-9	SO ₂ CH ₃	NO ₂	CH ₃
A-8	SO ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₃	Cl	CH ₃
A-8	SO ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₃	Cl	Cl
A-8	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-8	SO ₂ CH ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₂ CH ₃	Cl	Cl
A-8	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-8	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-8	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-9	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-8	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-9	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-8	SO ₂ N(CH ₃) ₂	Cl	Cl	A-9	SO ₂ N(CH ₃) ₂	Cl	Cl

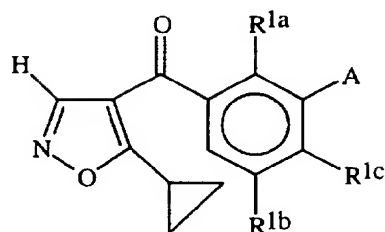
A-8	SO ₂ CF ₃	CH ₃	CH ₃	A-9	SO ₂ CF ₃	CH ₃	CH ₃
A-8	SO ₂ CF ₃	Cl	CH ₃	A-9	SO ₂ CF ₃	Cl	CH ₃
A-8	SO ₂ CF ₃	Cl	Cl	A-9	SO ₂ CF ₃	Cl	Cl
A-8	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-9	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-8	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-9	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-8	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-9	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-8	CF ₃	CH ₃	CH ₃	A-9	CF ₃	CH ₃	CH ₃
A-8	CF ₃	Cl	CH ₃	A-9	CF ₃	Cl	CH ₃
A-8	CF ₃	Cl	Cl	A-9	CF ₃	Cl	Cl
A-8	OCH ₃	CH ₃	CH ₃	A-9	OCH ₃	CH ₃	CH ₃
A-8	OCH ₃	Cl	CH ₃	A-9	OCH ₃	Cl	CH ₃
A-8	OCH ₃	Cl	Cl	A-9	OCH ₃	Cl	Cl
A-8	NO ₂	CH ₃	CH ₃	A-9	NO ₂	CH ₃	CH ₃
A-8	NO ₂	Cl	CH ₃	A-9	NO ₂	Cl	CH ₃
A-8	NO ₂	Cl	Cl	A-9	NO ₂	Cl	Cl
A-24	SO ₂ CH ₃	NO ₂	CH ₃	A-33	SO ₂ CH ₃	NO ₂	CH ₃
A-24	SO ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₃	Cl	CH ₃
A-24	SO ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₃	Cl	Cl
A-24	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-24	SO ₂ CH ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₂ CH ₃	Cl	Cl
A-24	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-24	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-24	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-33	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-24	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-33	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-24	SO ₂ N(CH ₃) ₂	Cl	Cl	A-33	SO ₂ N(CH ₃) ₂	Cl	Cl
A-24	SO ₂ CF ₃	CH ₃	CH ₃	A-33	SO ₂ CF ₃	CH ₃	CH ₃
A-24	SO ₂ CF ₃	Cl	CH ₃	A-33	SO ₂ CF ₃	Cl	CH ₃
A-24	SO ₂ CF ₃	Cl	Cl	A-33	SO ₂ CF ₃	Cl	Cl
A-24	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-33	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-24	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-33	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-24	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-33	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-24	CF ₃	CH ₃	CH ₃	A-33	CF ₃	CH ₃	CH ₃
A-24	CF ₃	Cl	CH ₃	A-33	CF ₃	Cl	CH ₃
A-24	CF ₃	Cl	Cl	A-33	CF ₃	Cl	Cl
A-24	OCH ₃	CH ₃	CH ₃	A-33	OCH ₃	CH ₃	CH ₃
A-24	OCH ₃	Cl	CH ₃	A-33	OCH ₃	Cl	CH ₃
A-24	OCH ₃	Cl	Cl	A-33	OCH ₃	Cl	Cl
A-24	NO ₂	CH ₃	CH ₃	A-33	NO ₂	CH ₃	CH ₃

A-24	NO ₂	Cl	CH ₃	A-33	NO ₂	Cl	CH ₃
A-24	NO ₂	Cl	Cl	A-33	NO ₂	Cl	Cl
A-42	SO ₂ CH ₃	NO ₂	CH ₃	A-44	SO ₂ CH ₃	NO ₂	CH ₃
A-42	SO ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₃	Cl	Cl
A-42	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₂ CH ₃	Cl	Cl
A-42	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-42	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-44	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-42	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-44	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-42	SO ₂ N(CH ₃) ₂	Cl	Cl	A-44	SO ₂ N(CH ₃) ₂	Cl	Cl
A-42	SO ₂ CF ₃	CH ₃	CH ₃	A-44	SO ₂ CF ₃	CH ₃	CH ₃
A-42	SO ₂ CF ₃	Cl	CH ₃	A-44	SO ₂ CF ₃	Cl	CH ₃
A-42	SO ₂ CF ₃	Cl	Cl	A-44	SO ₂ CF ₃	Cl	Cl
A-42	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-44	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-42	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-44	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-42	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-44	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-42	CF ₃	CH ₃	CH ₃	A-44	CF ₃	CH ₃	CH ₃
A-42	CF ₃	Cl	CH ₃	A-44	CF ₃	Cl	CH ₃
A-42	CF ₃	Cl	Cl	A-44	CF ₃	Cl	Cl
A-42	OCH ₃	CH ₃	CH ₃	A-44	OCH ₃	CH ₃	CH ₃
A-42	OCH ₃	Cl	CH ₃	A-44	OCH ₃	Cl	CH ₃
A-42	OCH ₃	Cl	Cl	A-44	OCH ₃	Cl	Cl
A-42	NO ₂	CH ₃	CH ₃	A-44	NO ₂	CH ₃	CH ₃
A-42	NO ₂	Cl	CH ₃	A-44	NO ₂	Cl	CH ₃
A-42	NO ₂	Cl	Cl	A-44	NO ₂	Cl	Cl
A-45	SO ₂ CH ₃	NO ₂	CH ₃	A-67	SO ₂ CH ₃	NO ₂	CH ₃
A-45	SO ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₃	Cl	Cl
A-45	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₂ CH ₃	Cl	Cl
A-45	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-45	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-67	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-45	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-67	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-45	SO ₂ N(CH ₃) ₂	Cl	Cl	A-67	SO ₂ N(CH ₃) ₂	Cl	Cl
A-45	SO ₂ CF ₃	CH ₃	CH ₃	A-67	SO ₂ CF ₃	CH ₃	CH ₃

A-45	SO ₂ CF ₃	Cl	CH ₃	A-67	SO ₂ CF ₃	Cl	CH ₃
A-45	SO ₂ CF ₃	Cl	Cl	A-67	SO ₂ CF ₃	Cl	Cl
A-45	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-67	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-45	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-67	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-45	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-67	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-45	CF ₃	CH ₃	CH ₃	A-67	CF ₃	CH ₃	CH ₃
A-45	CF ₃	Cl	CH ₃	A-67	CF ₃	Cl	CH ₃
A-45	CF ₃	Cl	Cl	A-67	CF ₃	Cl	Cl
A-45	OCH ₃	CH ₃	CH ₃	A-67	OCH ₃	CH ₃	CH ₃
A-45	OCH ₃	Cl	CH ₃	A-67	OCH ₃	Cl	CH ₃
A-45	OCH ₃	Cl	Cl	A-67	OCH ₃	Cl	Cl
A-45	NO ₂	CH ₃	CH ₃	A-67	NO ₂	CH ₃	CH ₃
A-45	NO ₂	Cl	CH ₃	A-67	NO ₂	Cl	CH ₃
A-45	NO ₂	Cl	Cl	A-67	NO ₂	Cl	Cl
A-68	SO ₂ CH ₃	NO ₂	CH ₃	A-71	SO ₂ CH ₃	NO ₂	CH ₃
A-68	SO ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₃	Cl	Cl
A-68	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₂ CH ₃	Cl	Cl
A-68	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-68	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-71	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-68	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-71	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-68	SO ₂ N(CH ₃) ₂	Cl	Cl	A-71	SO ₂ N(CH ₃) ₂	Cl	Cl
A-68	SO ₂ CF ₃	CH ₃	CH ₃	A-71	SO ₂ CF ₃	CH ₃	CH ₃
A-68	SO ₂ CF ₃	Cl	CH ₃	A-71	SO ₂ CF ₃	Cl	CH ₃
A-68	SO ₂ CF ₃	Cl	Cl	A-71	SO ₂ CF ₃	Cl	Cl
A-68	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-71	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-68	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-71	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-68	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-71	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-68	CF ₃	CH ₃	CH ₃	A-71	CF ₃	CH ₃	CH ₃
A-68	CF ₃	Cl	CH ₃	A-71	CF ₃	Cl	CH ₃
A-68	CF ₃	Cl	Cl	A-71	CF ₃	Cl	Cl
A-68	OCH ₃	CH ₃	CH ₃	A-71	OCH ₃	CH ₃	CH ₃
A-68	OCH ₃	Cl	CH ₃	A-71	OCH ₃	Cl	CH ₃
A-68	OCH ₃	Cl	Cl	A-71	OCH ₃	Cl	Cl
A-68	NO ₂	CH ₃	CH ₃	A-71	NO ₂	CH ₃	CH ₃
A-68	NO ₂	Cl	CH ₃	A-71	NO ₂	Cl	CH ₃

A-68	NO ₂	Cl	Cl	A-71	NO ₂	Cl	Cl
A-78	SO ₂ CH ₃	NO ₂	CH ₃	A-91	SO ₂ CH ₃	NO ₂	CH ₃
A-78	SO ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₃	Cl	Cl
A-78	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₂ CH ₃	Cl	Cl
A-78	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-78	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-91	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-78	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-91	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-78	SO ₂ N(CH ₃) ₂	Cl	Cl	A-91	SO ₂ N(CH ₃) ₂	Cl	Cl
A-78	SO ₂ CF ₃	CH ₃	CH ₃	A-91	SO ₂ CF ₃	CH ₃	CH ₃
A-78	SO ₂ CF ₃	Cl	CH ₃	A-91	SO ₂ CF ₃	Cl	CH ₃
A-78	SO ₂ CF ₃	Cl	Cl	A-91	SO ₂ CF ₃	Cl	Cl
A-78	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-91	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-78	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-91	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-78	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-91	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-78	CF ₃	CH ₃	CH ₃	A-91	CF ₃	CH ₃	CH ₃
A-78	CF ₃	Cl	CH ₃	A-91	CF ₃	Cl	CH ₃
A-78	CF ₃	Cl	Cl	A-91	CF ₃	Cl	Cl
A-78	OCH ₃	CH ₃	CH ₃	A-91	OCH ₃	CH ₃	CH ₃
A-78	OCH ₃	Cl	CH ₃	A-91	OCH ₃	Cl	CH ₃
A-78	OCH ₃	Cl	Cl	A-91	OCH ₃	Cl	Cl
A-78	NO ₂	CH ₃	CH ₃	A-91	NO ₂	CH ₃	CH ₃
A-78	NO ₂	Cl	CH ₃	A-91	NO ₂	Cl	CH ₃
A-78	NO ₂	Cl	Cl	A-91	NO ₂	Cl	Cl

TABLE 9



<u>A</u>	<u>R1c</u>	<u>R1a</u>	<u>R1b</u>	<u>A</u>	<u>R1c</u>	<u>R1a</u>	<u>R1b</u>
A-1	SO ₂ CH ₃	NO ₂	CH ₃	A-2	SO ₂ CH ₃	NO ₂	CH ₃

A-1	SO ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₃	Cl	Cl
A-1	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₂ CH ₃	Cl	Cl
A-1	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-1	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-2	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-1	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-2	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-1	SO ₂ N(CH ₃) ₂	Cl	Cl	A-2	SO ₂ N(CH ₃) ₂	Cl	Cl
A-1	SO ₂ CF ₃	CH ₃	CH ₃	A-2	SO ₂ CF ₃	CH ₃	CH ₃
A-1	SO ₂ CF ₃	Cl	CH ₃	A-2	SO ₂ CF ₃	Cl	CH ₃
A-1	SO ₂ CF ₃	Cl	Cl	A-2	SO ₂ CF ₃	Cl	Cl
A-1	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-2	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-1	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-2	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-1	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-2	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-1	CF ₃	CH ₃	CH ₃	A-2	CF ₃	CH ₃	CH ₃
A-1	CF ₃	Cl	CH ₃	A-2	CF ₃	Cl	CH ₃
A-1	CF ₃	Cl	Cl	A-2	CF ₃	Cl	Cl
A-1	OCH ₃	CH ₃	CH ₃	A-2	OCH ₃	CH ₃	CH ₃
A-1	OCH ₃	Cl	CH ₃	A-2	OCH ₃	Cl	CH ₃
A-1	OCH ₃	Cl	Cl	A-2	OCH ₃	Cl	Cl
A-1	NO ₂	CH ₃	CH ₃	A-2	NO ₂	CH ₃	CH ₃
A-1	NO ₂	Cl	CH ₃	A-2	NO ₂	Cl	CH ₃
A-1	NO ₂	Cl	Cl	A-2	NO ₂	Cl	Cl
A-5	SO ₂ CH ₃	NO ₂	CH ₃	A-7	SO ₂ CH ₃	NO ₂	CH ₃
A-5	SO ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₃	Cl	Cl
A-5	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₂ CH ₃	Cl	Cl
A-5	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-5	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-7	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-5	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-7	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-5	SO ₂ N(CH ₃) ₂	Cl	Cl	A-7	SO ₂ N(CH ₃) ₂	Cl	Cl
A-5	SO ₂ CF ₃	CH ₃	CH ₃	A-7	SO ₂ CF ₃	CH ₃	CH ₃
A-5	SO ₂ CF ₃	Cl	CH ₃	A-7	SO ₂ CF ₃	Cl	CH ₃
A-5	SO ₂ CF ₃	Cl	Cl	A-7	SO ₂ CF ₃	Cl	Cl
A-5	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-7	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃

A-5	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-7	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-5	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-7	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-5	CF ₃	CH ₃	CH ₃	A-7	CF ₃	CH ₃	CH ₃
A-5	CF ₃	Cl	CH ₃	A-7	CF ₃	Cl	CH ₃
A-5	CF ₃	Cl	Cl	A-7	CF ₃	Cl	Cl
A-5	OCH ₃	CH ₃	CH ₃	A-7	OCH ₃	CH ₃	CH ₃
A-5	OCH ₃	Cl	CH ₃	A-7	OCH ₃	Cl	CH ₃
A-5	OCH ₃	Cl	Cl	A-7	OCH ₃	Cl	Cl
A-5	NO ₂	CH ₃	CH ₃	A-7	NO ₂	CH ₃	CH ₃
A-5	NO ₂	Cl	CH ₃	A-7	NO ₂	Cl	CH ₃
A-5	NO ₂	Cl	Cl	A-7	NO ₂	Cl	Cl
A-8	SO ₂ CH ₃	NO ₂	CH ₃	A-9	SO ₂ CH ₃	NO ₂	CH ₃
A-8	SO ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₃	Cl	CH ₃
A-8	SO ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₃	Cl	Cl
A-8	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-8	SO ₂ CH ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₂ CH ₃	Cl	Cl
A-8	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-8	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-8	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-9	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-8	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-9	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-8	SO ₂ N(CH ₃) ₂	Cl	Cl	A-9	SO ₂ N(CH ₃) ₂	Cl	Cl
A-8	SO ₂ CF ₃	CH ₃	CH ₃	A-9	SO ₂ CF ₃	CH ₃	CH ₃
A-8	SO ₂ CF ₃	Cl	CH ₃	A-9	SO ₂ CF ₃	Cl	CH ₃
A-8	SO ₂ CF ₃	Cl	Cl	A-9	SO ₂ CF ₃	Cl	Cl
A-8	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-9	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-8	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-9	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-8	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-9	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-8	CF ₃	CH ₃	CH ₃	A-9	CF ₃	CH ₃	CH ₃
A-8	CF ₃	Cl	CH ₃	A-9	CF ₃	Cl	CH ₃
A-8	CF ₃	Cl	Cl	A-9	CF ₃	Cl	Cl
A-8	OCH ₃	CH ₃	CH ₃	A-9	OCH ₃	CH ₃	CH ₃
A-8	OCH ₃	Cl	CH ₃	A-9	OCH ₃	Cl	CH ₃
A-8	OCH ₃	Cl	Cl	A-9	OCH ₃	Cl	Cl
A-8	NO ₂	CH ₃	CH ₃	A-9	NO ₂	CH ₃	CH ₃
A-8	NO ₂	Cl	CH ₃	A-9	NO ₂	Cl	CH ₃
A-8	NO ₂	Cl	Cl	A-9	NO ₂	Cl	Cl
A-24	SO ₂ CH ₃	NO ₂	CH ₃	A-33	SO ₂ CH ₃	NO ₂	CH ₃
A-24	SO ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₃	Cl	CH ₃

A-24	SO ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₃	Cl	Cl
A-24	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-24	SO ₂ CH ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₂ CH ₃	Cl	Cl
A-24	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-24	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-24	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-33	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-24	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-33	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-24	SO ₂ N(CH ₃) ₂	Cl	Cl	A-33	SO ₂ N(CH ₃) ₂	Cl	Cl
A-24	SO ₂ CF ₃	CH ₃	CH ₃	A-33	SO ₂ CF ₃	CH ₃	CH ₃
A-24	SO ₂ CF ₃	Cl	CH ₃	A-33	SO ₂ CF ₃	Cl	CH ₃
A-24	SO ₂ CF ₃	Cl	Cl	A-33	SO ₂ CF ₃	Cl	Cl
A-24	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-33	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-24	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-33	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-24	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-33	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-24	CF ₃	CH ₃	CH ₃	A-33	CF ₃	CH ₃	CH ₃
A-24	CF ₃	Cl	CH ₃	A-33	CF ₃	Cl	CH ₃
A-24	CF ₃	Cl	Cl	A-33	CF ₃	Cl	Cl
A-24	OCH ₃	CH ₃	CH ₃	A-33	OCH ₃	CH ₃	CH ₃
A-24	OCH ₃	Cl	CH ₃	A-33	OCH ₃	Cl	CH ₃
A-24	OCH ₃	Cl	Cl	A-33	OCH ₃	Cl	Cl
A-24	NO ₂	CH ₃	CH ₃	A-33	NO ₂	CH ₃	CH ₃
A-24	NO ₂	Cl	CH ₃	A-33	NO ₂	Cl	CH ₃
A-24	NO ₂	Cl	Cl	A-33	NO ₂	Cl	Cl
A-42	SO ₂ CH ₃	NO ₂	CH ₃	A-44	SO ₂ CH ₃	NO ₂	CH ₃
A-42	SO ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₃	Cl	Cl
A-42	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₂ CH ₃	Cl	Cl
A-42	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-42	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-44	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-42	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-44	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-42	SO ₂ N(CH ₃) ₂	Cl	Cl	A-44	SO ₂ N(CH ₃) ₂	Cl	Cl
A-42	SO ₂ CF ₃	CH ₃	CH ₃	A-44	SO ₂ CF ₃	CH ₃	CH ₃
A-42	SO ₂ CF ₃	Cl	CH ₃	A-44	SO ₂ CF ₃	Cl	CH ₃
A-42	SO ₂ CF ₃	Cl	Cl	A-44	SO ₂ CF ₃	Cl	Cl
A-42	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-44	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-42	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-44	SO ₂ OCH ₂ CF ₃	Cl	CH ₃

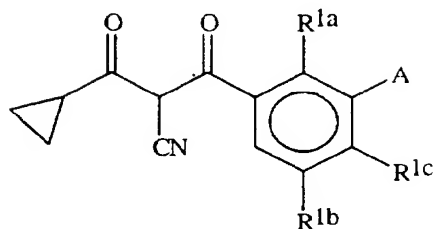
A-42	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-44	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-42	CF ₃	CH ₃	CH ₃	A-44	CF ₃	CH ₃	CH ₃
A-42	CF ₃	Cl	CH ₃	A-44	CF ₃	Cl	CH ₃
A-42	CF ₃	Cl	Cl	A-44	CF ₃	Cl	Cl
A-42	OCH ₃	CH ₃	CH ₃	A-44	OCH ₃	CH ₃	CH ₃
A-42	OCH ₃	Cl	CH ₃	A-44	OCH ₃	Cl	CH ₃
A-42	OCH ₃	Cl	Cl	A-44	OCH ₃	Cl	Cl
A-42	NO ₂	CH ₃	CH ₃	A-44	NO ₂	CH ₃	CH ₃
A-42	NO ₂	Cl	CH ₃	A-44	NO ₂	Cl	CH ₃
A-42	NO ₂	Cl	Cl	A-44	NO ₂	Cl	Cl
A-45	SO ₂ CH ₃	NO ₂	CH ₃	A-67	SO ₂ CH ₃	NO ₂	CH ₃
A-45	SO ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₃	Cl	Cl
A-45	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₂ CH ₃	Cl	Cl
A-45	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-45	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-67	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-45	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-67	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-45	SO ₂ N(CH ₃) ₂	Cl	Cl	A-67	SO ₂ N(CH ₃) ₂	Cl	Cl
A-45	SO ₂ CF ₃	CH ₃	CH ₃	A-67	SO ₂ CF ₃	CH ₃	CH ₃
A-45	SO ₂ CF ₃	Cl	CH ₃	A-67	SO ₂ CF ₃	Cl	CH ₃
A-45	SO ₂ CF ₃	Cl	Cl	A-67	SO ₂ CF ₃	Cl	Cl
A-45	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-67	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-45	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-67	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-45	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-67	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-45	CF ₃	CH ₃	CH ₃	A-67	CF ₃	CH ₃	CH ₃
A-45	CF ₃	Cl	CH ₃	A-67	CF ₃	Cl	CH ₃
A-45	CF ₃	Cl	Cl	A-67	CF ₃	Cl	Cl
A-45	OCH ₃	CH ₃	CH ₃	A-67	OCH ₃	CH ₃	CH ₃
A-45	OCH ₃	Cl	CH ₃	A-67	OCH ₃	Cl	CH ₃
A-45	OCH ₃	Cl	Cl	A-67	OCH ₃	Cl	Cl
A-45	NO ₂	CH ₃	CH ₃	A-67	NO ₂	CH ₃	CH ₃
A-45	NO ₂	Cl	CH ₃	A-67	NO ₂	Cl	CH ₃
A-45	NO ₂	Cl	Cl	A-67	NO ₂	Cl	Cl
A-68	SO ₂ CH ₃	NO ₂	CH ₃	A-71	SO ₂ CH ₃	NO ₂	CH ₃
A-68	SO ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₃	Cl	Cl

A-68	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₂ CH ₃	Cl	Cl
A-68	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-68	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-71	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-68	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-71	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-68	SO ₂ N(CH ₃) ₂	Cl	Cl	A-71	SO ₂ N(CH ₃) ₂	Cl	Cl
A-68	SO ₂ CF ₃	CH ₃	CH ₃	A-71	SO ₂ CF ₃	CH ₃	CH ₃
A-68	SO ₂ CF ₃	Cl	CH ₃	A-71	SO ₂ CF ₃	Cl	CH ₃
A-68	SO ₂ CF ₃	Cl	Cl	A-71	SO ₂ CF ₃	Cl	Cl
A-68	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-71	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-68	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-71	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-68	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-71	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-68	CF ₃	CH ₃	CH ₃	A-71	CF ₃	CH ₃	CH ₃
A-68	CF ₃	Cl	CH ₃	A-71	CF ₃	Cl	CH ₃
A-68	CF ₃	Cl	Cl	A-71	CF ₃	Cl	Cl
A-68	OCH ₃	CH ₃	CH ₃	A-71	OCH ₃	CH ₃	CH ₃
A-68	OCH ₃	Cl	CH ₃	A-71	OCH ₃	Cl	CH ₃
A-68	OCH ₃	Cl	Cl	A-71	OCH ₃	Cl	Cl
A-68	NO ₂	CH ₃	CH ₃	A-71	NO ₂	CH ₃	CH ₃
A-68	NO ₂	Cl	CH ₃	A-71	NO ₂	Cl	CH ₃
A-68	NO ₂	Cl	Cl	A-71	NO ₂	Cl	Cl
A-78	SO ₂ CH ₃	NO ₂	CH ₃	A-91	SO ₂ CH ₃	NO ₂	CH ₃
A-78	SO ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₃	Cl	Cl
A-78	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₂ CH ₃	Cl	Cl
A-78	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-78	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-91	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-78	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-91	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-78	SO ₂ N(CH ₃) ₂	Cl	Cl	A-91	SO ₂ N(CH ₃) ₂	Cl	Cl
A-78	SO ₂ CF ₃	CH ₃	CH ₃	A-91	SO ₂ CF ₃	CH ₃	CH ₃
A-78	SO ₂ CF ₃	Cl	CH ₃	A-91	SO ₂ CF ₃	Cl	CH ₃
A-78	SO ₂ CF ₃	Cl	Cl	A-91	SO ₂ CF ₃	Cl	Cl
A-78	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-91	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-78	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-91	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-78	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-91	SO ₂ OCH ₂ CF ₃	Cl	Cl

55

A-78	CF ₃	CH ₃	CH ₃	A-91	CF ₃	CH ₃	CH ₃
A-78	CF ₃	Cl	CH ₃	A-91	CF ₃	Cl	CH ₃
A-78	CF ₃	Cl	Cl	A-91	CF ₃	Cl	Cl
A-78	OCH ₃	CH ₃	CH ₃	A-91	OCH ₃	CH ₃	CH ₃
A-78	OCH ₃	Cl	CH ₃	A-91	OCH ₃	Cl	CH ₃
A-78	OCH ₃	Cl	Cl	A-91	OCH ₃	Cl	Cl
A-78	NO ₂	CH ₃	CH ₃	A-91	NO ₂	CH ₃	CH ₃
A-78	NO ₂	Cl	CH ₃	A-91	NO ₂	Cl	CH ₃
A-78	NO ₂	Cl	Cl	A-91	NO ₂	Cl	Cl

TABLE 10



<u>A</u>	<u>R^{1c}</u>	<u>R^{1a}</u>	<u>R^{1b}</u>	<u>A</u>	<u>R^{1c}</u>	<u>R^{1a}</u>	<u>R^{1b}</u>
A-1	SO ₂ CH ₃	NO ₂	CH ₃	A-2	SO ₂ CH ₃	NO ₂	CH ₃
A-1	SO ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₃	Cl	Cl
A-1	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₂ CH ₃	Cl	Cl
A-1	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-2	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-1	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-2	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-1	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-2	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-1	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-2	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-1	SO ₂ N(CH ₃) ₂	Cl	Cl	A-2	SO ₂ N(CH ₃) ₂	Cl	Cl
A-1	SO ₂ CF ₃	CH ₃	CH ₃	A-2	SO ₂ CF ₃	CH ₃	CH ₃
A-1	SO ₂ CF ₃	Cl	CH ₃	A-2	SO ₂ CF ₃	Cl	CH ₃
A-1	SO ₂ CF ₃	Cl	Cl	A-2	SO ₂ CF ₃	Cl	Cl
A-1	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-2	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-1	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-2	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-1	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-2	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-1	CF ₃	CH ₃	CH ₃	A-2	CF ₃	CH ₃	CH ₃
A-1	CF ₃	Cl	CH ₃	A-2	CF ₃	Cl	CH ₃

A-1	CF ₃	Cl	Cl	A-2	CF ₃	Cl	Cl
A-1	OCH ₃	CH ₃	CH ₃	A-2	OCH ₃	CH ₃	CH ₃
A-1	OCH ₃	Cl	CH ₃	A-2	OCH ₃	Cl	CH ₃
A-1	OCH ₃	Cl	Cl	A-2	OCH ₃	Cl	Cl
A-1	NO ₂	CH ₃	CH ₃	A-2	NO ₂	CH ₃	CH ₃
A-1	NO ₂	Cl	CH ₃	A-2	NO ₂	Cl	CH ₃
A-1	NO ₂	Cl	Cl	A-2	NO ₂	Cl	Cl
A-5	SO ₂ CH ₃	NO ₂	CH ₃	A-7	SO ₂ CH ₃	NO ₂	CH ₃
A-5	SO ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₃	Cl	Cl
A-5	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₂ CH ₃	Cl	Cl
A-5	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-7	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-5	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-7	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-5	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-7	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-5	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-7	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-5	SO ₂ N(CH ₃) ₂	Cl	Cl	A-7	SO ₂ N(CH ₃) ₂	Cl	Cl
A-5	SO ₂ CF ₃	CH ₃	CH ₃	A-7	SO ₂ CF ₃	CH ₃	CH ₃
A-5	SO ₂ CF ₃	Cl	CH ₃	A-7	SO ₂ CF ₃	Cl	CH ₃
A-5	SO ₂ CF ₃	Cl	Cl	A-7	SO ₂ CF ₃	Cl	Cl
A-5	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-7	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-5	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-7	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-5	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-7	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-5	CF ₃	CH ₃	CH ₃	A-7	CF ₃	CH ₃	CH ₃
A-5	CF ₃	Cl	CH ₃	A-7	CF ₃	Cl	CH ₃
A-5	CF ₃	Cl	Cl	A-7	CF ₃	Cl	Cl
A-5	OCH ₃	CH ₃	CH ₃	A-7	OCH ₃	CH ₃	CH ₃
A-5	OCH ₃	Cl	CH ₃	A-7	OCH ₃	Cl	CH ₃
A-5	OCH ₃	Cl	Cl	A-7	OCH ₃	Cl	Cl
A-5	NO ₂	CH ₃	CH ₃	A-7	NO ₂	CH ₃	CH ₃
A-5	NO ₂	Cl	CH ₃	A-7	NO ₂	Cl	CH ₃
A-5	NO ₂	Cl	Cl	A-7	NO ₂	Cl	Cl
A-8	SO ₂ CH ₃	NO ₂	CH ₃	A-9	SO ₂ CH ₃	NO ₂	CH ₃
A-8	SO ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₃	Cl	CH ₃
A-8	SO ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₃	Cl	Cl
A-8	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-8	SO ₂ CH ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₂ CH ₃	Cl	Cl
A-8	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-9	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃

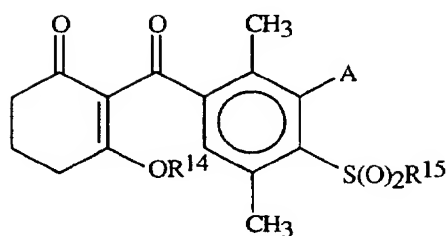
A-8	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-9	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-8	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-9	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-8	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-9	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-8	SO ₂ N(CH ₃) ₂	Cl	Cl	A-9	SO ₂ N(CH ₃) ₂	Cl	Cl
A-8	SO ₂ CF ₃	CH ₃	CH ₃	A-9	SO ₂ CF ₃	CH ₃	CH ₃
A-8	SO ₂ CF ₃	Cl	CH ₃	A-9	SO ₂ CF ₃	Cl	CH ₃
A-8	SO ₂ CF ₃	Cl	Cl	A-9	SO ₂ CF ₃	Cl	Cl
A-8	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-9	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-8	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-9	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-8	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-9	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-8	CF ₃	CH ₃	CH ₃	A-9	CF ₃	CH ₃	CH ₃
A-8	CF ₃	Cl	CH ₃	A-9	CF ₃	Cl	CH ₃
A-8	CF ₃	Cl	Cl	A-9	CF ₃	Cl	Cl
A-8	OCH ₃	CH ₃	CH ₃	A-9	OCH ₃	CH ₃	CH ₃
A-8	OCH ₃	Cl	CH ₃	A-9	OCH ₃	Cl	CH ₃
A-8	OCH ₃	Cl	Cl	A-9	OCH ₃	Cl	Cl
A-8	NO ₂	CH ₃	CH ₃	A-9	NO ₂	CH ₃	CH ₃
A-8	NO ₂	Cl	CH ₃	A-9	NO ₂	Cl	CH ₃
A-8	NO ₂	Cl	Cl	A-9	NO ₂	Cl	Cl
A-24	SO ₂ CH ₃	NO ₂	CH ₃	A-33	SO ₂ CH ₃	NO ₂	CH ₃
A-24	SO ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₃	Cl	CH ₃
A-24	SO ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₃	Cl	Cl
A-24	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-24	SO ₂ CH ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₂ CH ₃	Cl	Cl
A-24	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-33	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-24	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-33	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-24	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-33	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-24	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-33	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-24	SO ₂ N(CH ₃) ₂	Cl	Cl	A-33	SO ₂ N(CH ₃) ₂	Cl	Cl
A-24	SO ₂ CF ₃	CH ₃	CH ₃	A-33	SO ₂ CF ₃	CH ₃	CH ₃
A-24	SO ₂ CF ₃	Cl	CH ₃	A-33	SO ₂ CF ₃	Cl	CH ₃
A-24	SO ₂ CF ₃	Cl	Cl	A-33	SO ₂ CF ₃	Cl	Cl
A-24	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-33	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-24	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-33	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-24	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-33	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-24	CF ₃	CH ₃	CH ₃	A-33	CF ₃	CH ₃	CH ₃
A-24	CF ₃	Cl	CH ₃	A-33	CF ₃	Cl	CH ₃
A-24	CF ₃	Cl	Cl	A-33	CF ₃	Cl	Cl

A-24	OCH ₃	CH ₃	CH ₃	A-33	OCH ₃	CH ₃	CH ₃
A-24	OCH ₃	Cl	CH ₃	A-33	OCH ₃	Cl	CH ₃
A-24	OCH ₃	Cl	Cl	A-33	OCH ₃	Cl	Cl
A-24	NO ₂	CH ₃	CH ₃	A-33	NO ₂	CH ₃	CH ₃
A-24	NO ₂	Cl	CH ₃	A-33	NO ₂	Cl	CH ₃
A-24	NO ₂	Cl	Cl	A-33	NO ₂	Cl	Cl
A-42	SO ₂ CH ₃	NO ₂	CH ₃	A-44	SO ₂ CH ₃	NO ₂	CH ₃
A-42	SO ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₃	Cl	Cl
A-42	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₂ CH ₃	Cl	Cl
A-42	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-44	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-42	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-44	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-42	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-44	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-42	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-44	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-42	SO ₂ N(CH ₃) ₂	Cl	Cl	A-44	SO ₂ N(CH ₃) ₂	Cl	Cl
A-42	SO ₂ CF ₃	CH ₃	CH ₃	A-44	SO ₂ CF ₃	CH ₃	CH ₃
A-42	SO ₂ CF ₃	Cl	CH ₃	A-44	SO ₂ CF ₃	Cl	CH ₃
A-42	SO ₂ CF ₃	Cl	Cl	A-44	SO ₂ CF ₃	Cl	Cl
A-42	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-44	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-42	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-44	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-42	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-44	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-42	CF ₃	CH ₃	CH ₃	A-44	CF ₃	CH ₃	CH ₃
A-42	CF ₃	Cl	CH ₃	A-44	CF ₃	Cl	CH ₃
A-42	CF ₃	Cl	Cl	A-44	CF ₃	Cl	Cl
A-42	OCH ₃	CH ₃	CH ₃	A-44	OCH ₃	CH ₃	CH ₃
A-42	OCH ₃	Cl	CH ₃	A-44	OCH ₃	Cl	CH ₃
A-42	OCH ₃	Cl	Cl	A-44	OCH ₃	Cl	Cl
A-42	NO ₂	CH ₃	CH ₃	A-44	NO ₂	CH ₃	CH ₃
A-42	NO ₂	Cl	CH ₃	A-44	NO ₂	Cl	CH ₃
A-42	NO ₂	Cl	Cl	A-44	NO ₂	Cl	Cl
A-45	SO ₂ CH ₃	NO ₂	CH ₃	A-67	SO ₂ CH ₃	NO ₂	CH ₃
A-45	SO ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₃	Cl	Cl
A-45	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₂ CH ₃	Cl	Cl
A-45	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-67	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-45	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-67	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl

A-45	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-67	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-45	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-67	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-45	SO ₂ N(CH ₃) ₂	Cl	Cl	A-67	SO ₂ N(CH ₃) ₂	Cl	Cl
A-45	SO ₂ CF ₃	CH ₃	CH ₃	A-67	SO ₂ CF ₃	CH ₃	CH ₃
A-45	SO ₂ CF ₃	Cl	CH ₃	A-67	SO ₂ CF ₃	Cl	CH ₃
A-45	SO ₂ CF ₃	Cl	Cl	A-67	SO ₂ CF ₃	Cl	Cl
A-45	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-67	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-45	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-67	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-45	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-67	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-45	CF ₃	CH ₃	CH ₃	A-67	CF ₃	CH ₃	CH ₃
A-45	CF ₃	Cl	CH ₃	A-67	CF ₃	Cl	CH ₃
A-45	CF ₃	Cl	Cl	A-67	CF ₃	Cl	Cl
A-45	OCH ₃	CH ₃	CH ₃	A-67	OCH ₃	CH ₃	CH ₃
A-45	OCH ₃	Cl	CH ₃	A-67	OCH ₃	Cl	CH ₃
A-45	OCH ₃	Cl	Cl	A-67	OCH ₃	Cl	Cl
A-45	NO ₂	CH ₃	CH ₃	A-67	NO ₂	CH ₃	CH ₃
A-45	NO ₂	Cl	CH ₃	A-67	NO ₂	Cl	CH ₃
A-45	NO ₂	Cl	Cl	A-67	NO ₂	Cl	Cl
A-68	SO ₂ CH ₃	NO ₂	CH ₃	A-71	SO ₂ CH ₃	NO ₂	CH ₃
A-68	SO ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₃	Cl	Cl
A-68	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₂ CH ₃	Cl	Cl
A-68	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-71	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-68	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-71	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-68	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-71	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-68	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-71	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-68	SO ₂ N(CH ₃) ₂	Cl	Cl	A-71	SO ₂ N(CH ₃) ₂	Cl	Cl
A-68	SO ₂ CF ₃	CH ₃	CH ₃	A-71	SO ₂ CF ₃	CH ₃	CH ₃
A-68	SO ₂ CF ₃	Cl	CH ₃	A-71	SO ₂ CF ₃	Cl	CH ₃
A-68	SO ₂ CF ₃	Cl	Cl	A-71	SO ₂ CF ₃	Cl	Cl
A-68	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-71	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-68	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-71	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-68	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-71	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-68	CF ₃	CH ₃	CH ₃	A-71	CF ₃	CH ₃	CH ₃
A-68	CF ₃	Cl	CH ₃	A-71	CF ₃	Cl	CH ₃
A-68	CF ₃	Cl	Cl	A-71	CF ₃	Cl	Cl
A-68	OCH ₃	CH ₃	CH ₃	A-71	OCH ₃	CH ₃	CH ₃

A-68	OCH ₃	Cl	CH ₃	A-71	OCH ₃	Cl	CH ₃
A-68	OCH ₃	Cl	Cl	A-71	OCH ₃	Cl	Cl
A-68	NO ₂	CH ₃	CH ₃	A-71	NO ₂	CH ₃	CH ₃
A-68	NO ₂	Cl	CH ₃	A-71	NO ₂	Cl	CH ₃
A-68	NO ₂	Cl	Cl	A-71	NO ₂	Cl	Cl
A-78	SO ₂ CH ₃	NO ₂	CH ₃	A-91	SO ₂ CH ₃	NO ₂	CH ₃
A-78	SO ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₃	Cl	Cl
A-78	SO ₂ CH ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₂ CH ₃	Cl	Cl
A-78	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃	A-91	SO ₂ CH ₂ CH ₂ CH ₃	Cl	CH ₃
A-78	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl	A-91	SO ₂ CH ₂ CH ₂ CH ₃	Cl	Cl
A-78	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃	A-91	SO ₂ N(CH ₃) ₂	CH ₃	CH ₃
A-78	SO ₂ N(CH ₃) ₂	Cl	CH ₃	A-91	SO ₂ N(CH ₃) ₂	Cl	CH ₃
A-78	SO ₂ N(CH ₃) ₂	Cl	Cl	A-91	SO ₂ N(CH ₃) ₂	Cl	Cl
A-78	SO ₂ CF ₃	CH ₃	CH ₃	A-91	SO ₂ CF ₃	CH ₃	CH ₃
A-78	SO ₂ CF ₃	Cl	CH ₃	A-91	SO ₂ CF ₃	Cl	CH ₃
A-78	SO ₂ CF ₃	Cl	Cl	A-91	SO ₂ CF ₃	Cl	Cl
A-78	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃	A-91	SO ₂ OCH ₂ CF ₃	CH ₃	CH ₃
A-78	SO ₂ OCH ₂ CF ₃	Cl	CH ₃	A-91	SO ₂ OCH ₂ CF ₃	Cl	CH ₃
A-78	SO ₂ OCH ₂ CF ₃	Cl	Cl	A-91	SO ₂ OCH ₂ CF ₃	Cl	Cl
A-78	CF ₃	CH ₃	CH ₃	A-91	CF ₃	CH ₃	CH ₃
A-78	CF ₃	Cl	CH ₃	A-91	CF ₃	Cl	CH ₃
A-78	CF ₃	Cl	Cl	A-91	CF ₃	Cl	Cl
A-78	OCH ₃	CH ₃	CH ₃	A-91	OCH ₃	CH ₃	CH ₃
A-78	OCH ₃	Cl	CH ₃	A-91	OCH ₃	Cl	CH ₃
A-78	OCH ₃	Cl	Cl	A-91	OCH ₃	Cl	Cl
A-78	NO ₂	CH ₃	CH ₃	A-91	NO ₂	CH ₃	CH ₃
A-78	NO ₂	Cl	CH ₃	A-91	NO ₂	Cl	CH ₃
A-78	NO ₂	Cl	Cl	A-91	NO ₂	Cl	Cl

TABLE 11

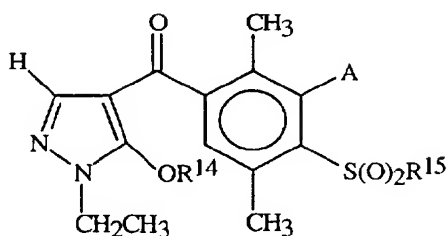


<u>A</u>	<u>R¹⁵</u>	<u>R¹⁴</u>	<u>A</u>	<u>R¹⁵</u>	<u>R¹⁴</u>
A-1	CH ₃	PhC(=O)	A-2	CH ₃	PhC(=O)
A-1	CH ₃	4-CH ₃ PhC(=O)	A-2	CH ₃	4-CH ₃ PhC(=O)
A-1	CH ₃	CH ₃ S(O) ₂	A-2	CH ₃	CH ₃ S(O) ₂
A-1	CH ₃	CH ₃ CH ₂ S(O) ₂	A-2	CH ₃	CH ₃ CH ₂ S(O) ₂
A-1	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-2	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-1	CH ₃	PhS(O) ₂	A-2	CH ₃	PhS(O) ₂
A-1	CH ₃	4-CH ₃ PhS(O) ₂	A-2	CH ₃	4-CH ₃ PhS(O) ₂
A-1	CH ₃	Na	A-2	CH ₃	Na
A-1	CH ₃	K	A-2	CH ₃	K
A-3	CH ₃	PhC(=O)	A-33	CH ₃	PhC(=O)
A-3	CH ₃	4-CH ₃ PhC(=O)	A-33	CH ₃	4-CH ₃ PhC(=O)
A-3	CH ₃	CH ₃ S(O) ₂	A-33	CH ₃	CH ₃ S(O) ₂
A-3	CH ₃	CH ₃ CH ₂ S(O) ₂	A-33	CH ₃	CH ₃ CH ₂ S(O) ₂
A-3	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-33	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-3	CH ₃	PhS(O) ₂	A-33	CH ₃	PhS(O) ₂
A-3	CH ₃	4-CH ₃ PhS(O) ₂	A-33	CH ₃	4-CH ₃ PhS(O) ₂
A-3	CH ₃	Na	A-33	CH ₃	Na
A-3	CH ₃	K	A-33	CH ₃	K
A-67	CH ₃	PhC(=O)	A-71	CH ₃	PhC(=O)
A-67	CH ₃	4-CH ₃ PhC(=O)	A-71	CH ₃	4-CH ₃ PhC(=O)
A-67	CH ₃	CH ₃ S(O) ₂	A-71	CH ₃	CH ₃ S(O) ₂
A-67	CH ₃	CH ₃ CH ₂ S(O) ₂	A-71	CH ₃	CH ₃ CH ₂ S(O) ₂
A-67	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-71	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-67	CH ₃	PhS(O) ₂	A-71	CH ₃	PhS(O) ₂
A-67	CH ₃	4-CH ₃ PhS(O) ₂	A-71	CH ₃	4-CH ₃ PhS(O) ₂
A-67	CH ₃	Na	A-71	CH ₃	Na
A-67	CH ₃	K	A-71	CH ₃	K
A-1	CH ₂ CH ₃	PhC(=O)	A-2	CH ₂ CH ₃	PhC(=O)

A-1	CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-2	CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-1	CH ₂ CH ₃	CH ₃ S(O) ₂	A-2	CH ₂ CH ₃	CH ₃ S(O) ₂
A-1	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-2	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-1	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-2	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-1	CH ₂ CH ₃	PhS(O) ₂	A-2	CH ₂ CH ₃	PhS(O) ₂
A-1	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-2	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-1	CH ₂ CH ₃	Na	A-2	CH ₂ CH ₃	Na
A-1	CH ₂ CH ₃	K	A-2	CH ₂ CH ₃	K
A-3	CH ₂ CH ₃	PhC(=O)	A-33	CH ₂ CH ₃	PhC(=O)
A-3	CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-33	CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-3	CH ₂ CH ₃	CH ₃ S(O) ₂	A-33	CH ₂ CH ₃	CH ₃ S(O) ₂
A-3	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-33	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-3	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-33	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-3	CH ₂ CH ₃	PhS(O) ₂	A-33	CH ₂ CH ₃	PhS(O) ₂
A-3	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-33	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-3	CH ₂ CH ₃	Na	A-33	CH ₂ CH ₃	Na
A-3	CH ₂ CH ₃	K	A-33	CH ₂ CH ₃	K
A-67	CH ₂ CH ₃	PhC(=O)	A-71	CH ₂ CH ₃	PhC(=O)
A-67	CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-71	CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-67	CH ₂ CH ₃	CH ₃ S(O) ₂	A-71	CH ₂ CH ₃	CH ₃ S(O) ₂
A-67	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-71	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-67	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-71	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-67	CH ₂ CH ₃	PhS(O) ₂	A-71	CH ₂ CH ₃	PhS(O) ₂
A-67	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-71	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-67	CH ₂ CH ₃	Na	A-71	CH ₂ CH ₃	Na
A-67	CH ₂ CH ₃	K	A-71	CH ₂ CH ₃	K
A-1	CH ₂ CH ₂ CH ₃	PhC(=O)	A-2	CH ₂ CH ₂ CH ₃	PhC(=O)
A-1	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-2	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-1	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂	A-2	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂
A-1	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-2	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-1	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-2	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-1	CH ₂ CH ₂ CH ₃	PhS(O) ₂	A-2	CH ₂ CH ₂ CH ₃	PhS(O) ₂
A-1	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-2	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-1	CH ₂ CH ₂ CH ₃	Na	A-2	CH ₂ CH ₂ CH ₃	Na
A-1	CH ₂ CH ₂ CH ₃	K	A-2	CH ₂ CH ₂ CH ₃	K
A-3	CH ₂ CH ₂ CH ₃	PhC(=O)	A-33	CH ₂ CH ₂ CH ₃	PhC(=O)
A-3	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-33	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-3	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂	A-33	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂

A-3	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-33	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-3	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-33	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-3	CH ₂ CH ₂ CH ₃	PhS(O) ₂	A-33	CH ₂ CH ₂ CH ₃	PhS(O) ₂
A-3	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-33	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-3	CH ₂ CH ₂ CH ₃	Na	A-33	CH ₂ CH ₂ CH ₃	Na
A-3	CH ₂ CH ₂ CH ₃	K	A-33	CH ₂ CH ₂ CH ₃	K
A-67	CH ₂ CH ₂ CH ₃	PhC(=O)	A-71	CH ₂ CH ₂ CH ₃	PhC(=O)
A-67	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-71	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-67	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂	A-71	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂
A-67	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-71	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-67	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-71	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-67	CH ₂ CH ₂ CH ₃	PhS(O) ₂	A-71	CH ₂ CH ₂ CH ₃	PhS(O) ₂
A-67	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-71	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-67	CH ₂ CH ₂ CH ₃	Na	A-71	CH ₂ CH ₂ CH ₃	Na
A-67	CH ₂ CH ₂ CH ₃	K	A-71	CH ₂ CH ₂ CH ₃	K

TABLE 12

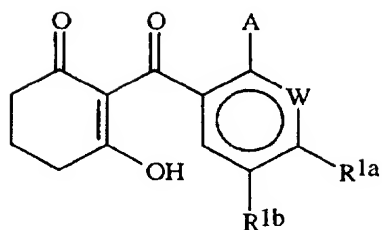


<u>A</u>	<u>R¹⁵</u>	<u>R¹⁴</u>	<u>A</u>	<u>R¹⁵</u>	<u>R¹⁴</u>
A-1	CH ₃	PhC(=O)	A-2	CH ₃	PhC(=O)
A-1	CH ₃	4-CH ₃ PhC(=O)	A-2	CH ₃	4-CH ₃ PhC(=O)
A-1	CH ₃	CH ₃ S(O) ₂	A-2	CH ₃	CH ₃ S(O) ₂
A-1	CH ₃	CH ₃ CH ₂ S(O) ₂	A-2	CH ₃	CH ₃ CH ₂ S(O) ₂
A-1	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-2	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-1	CH ₃	PhS(O) ₂	A-2	CH ₃	PhS(O) ₂
A-1	CH ₃	4-CH ₃ PhS(O) ₂	A-2	CH ₃	4-CH ₃ PhS(O) ₂
A-1	CH ₃	Na	A-2	CH ₃	Na
A-1	CH ₃	K	A-2	CH ₃	K
A-3	CH ₃	PhC(=O)	A-33	CH ₃	PhC(=O)
A-3	CH ₃	4-CH ₃ PhC(=O)	A-33	CH ₃	4-CH ₃ PhC(=O)
A-3	CH ₃	CH ₃ S(O) ₂	A-33	CH ₃	CH ₃ S(O) ₂

A-3	CH ₃	CH ₃ CH ₂ S(O) ₂	A-33	CH ₃	CH ₃ CH ₂ S(O) ₂
A-3	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-33	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-3	CH ₃	PhS(O) ₂	A-33	CH ₃	PhS(O) ₂
A-3	CH ₃	4-CH ₃ PhS(O) ₂	A-33	CH ₃	4-CH ₃ PhS(O) ₂
A-3	CH ₃	Na	A-33	CH ₃	Na
A-3	CH ₃	K	A-33	CH ₃	K
A-67	CH ₃	PhC(=O)	A-71	CH ₃	PhC(=O)
A-67	CH ₃	4-CH ₃ PhC(=O)	A-71	CH ₃	4-CH ₃ PhC(=O)
A-67	CH ₃	CH ₃ S(O) ₂	A-71	CH ₃	CH ₃ S(O) ₂
A-67	CH ₃	CH ₃ CH ₂ S(O) ₂	A-71	CH ₃	CH ₃ CH ₂ S(O) ₂
A-67	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-71	CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-67	CH ₃	PhS(O) ₂	A-71	CH ₃	PhS(O) ₂
A-67	CH ₃	4-CH ₃ PhS(O) ₂	A-71	CH ₃	4-CH ₃ PhS(O) ₂
A-67	CH ₃	Na	A-71	CH ₃	Na
A-67	CH ₃	K	A-71	CH ₃	K
A-1	CH ₂ CH ₃	PhC(=O)	A-2	CH ₂ CH ₃	PhC(=O)
A-1	CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-2	CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-1	CH ₂ CH ₃	CH ₃ S(O) ₂	A-2	CH ₂ CH ₃	CH ₃ S(O) ₂
A-1	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-2	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-1	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-2	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-1	CH ₂ CH ₃	PhS(O) ₂	A-2	CH ₂ CH ₃	PhS(O) ₂
A-1	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-2	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-1	CH ₂ CH ₃	Na	A-2	CH ₂ CH ₃	Na
A-1	CH ₂ CH ₃	K	A-2	CH ₂ CH ₃	K
A-3	CH ₂ CH ₃	PhC(=O)	A-33	CH ₂ CH ₃	PhC(=O)
A-3	CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-33	CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-3	CH ₂ CH ₃	CH ₃ S(O) ₂	A-33	CH ₂ CH ₃	CH ₃ S(O) ₂
A-3	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-33	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-3	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-33	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-3	CH ₂ CH ₃	PhS(O) ₂	A-33	CH ₂ CH ₃	PhS(O) ₂
A-3	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-33	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-3	CH ₂ CH ₃	Na	A-33	CH ₂ CH ₃	Na
A-3	CH ₂ CH ₃	K	A-33	CH ₂ CH ₃	K
A-67	CH ₂ CH ₃	PhC(=O)	A-71	CH ₂ CH ₃	PhC(=O)
A-67	CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-71	CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-67	CH ₂ CH ₃	CH ₃ S(O) ₂	A-71	CH ₂ CH ₃	CH ₃ S(O) ₂
A-67	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-71	CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-67	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-71	CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂

A-67	CH ₂ CH ₃	PhS(O) ₂	A-71	CH ₂ CH ₃	PhS(O) ₂
A-67	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-71	CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-67	CH ₂ CH ₃	Na	A-71	CH ₂ CH ₃	Na
A-67	CH ₂ CH ₃	K	A-71	CH ₂ CH ₃	K
A-1	CH ₂ CH ₂ CH ₃	PhC(=O)	A-2	CH ₂ CH ₂ CH ₃	PhC(=O)
A-1	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-2	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-1	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂	A-2	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂
A-1	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-2	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-1	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-2	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-1	CH ₂ CH ₂ CH ₃	PhS(O) ₂	A-2	CH ₂ CH ₂ CH ₃	PhS(O) ₂
A-1	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-2	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-1	CH ₂ CH ₂ CH ₃	Na	A-2	CH ₂ CH ₂ CH ₃	Na
A-1	CH ₂ CH ₂ CH ₃	K	A-2	CH ₂ CH ₂ CH ₃	K
A-3	CH ₂ CH ₂ CH ₃	PhC(=O)	A-33	CH ₂ CH ₂ CH ₃	PhC(=O)
A-3	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-33	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-3	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂	A-33	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂
A-3	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-33	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-3	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-33	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-3	CH ₂ CH ₂ CH ₃	PhS(O) ₂	A-33	CH ₂ CH ₂ CH ₃	PhS(O) ₂
A-3	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-33	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-3	CH ₂ CH ₂ CH ₃	Na	A-33	CH ₂ CH ₂ CH ₃	Na
A-3	CH ₂ CH ₂ CH ₃	K	A-33	CH ₂ CH ₂ CH ₃	K
A-67	CH ₂ CH ₂ CH ₃	PhC(=O)	A-71	CH ₂ CH ₂ CH ₃	PhC(=O)
A-67	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)	A-71	CH ₂ CH ₂ CH ₃	4-CH ₃ PhC(=O)
A-67	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂	A-71	CH ₂ CH ₂ CH ₃	CH ₃ S(O) ₂
A-67	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂	A-71	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ S(O) ₂
A-67	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂	A-71	CH ₂ CH ₂ CH ₃	CH ₃ CH ₂ CH ₂ S(O) ₂
A-67	CH ₂ CH ₂ CH ₃	PhS(O) ₂	A-71	CH ₂ CH ₂ CH ₃	PhS(O) ₂
A-67	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂	A-71	CH ₂ CH ₂ CH ₃	4-CH ₃ PhS(O) ₂
A-67	CH ₂ CH ₂ CH ₃	Na	A-71	CH ₂ CH ₂ CH ₃	Na
A-67	CH ₂ CH ₂ CH ₃	K	A-71	CH ₂ CH ₂ CH ₃	K

TABLE 13



R^{1a} is CF₃, R^{1b} is H, and W is N

A	A	A	A	A	A	A	A	A	A	A	A
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF₃, R^{1b} is H, and W is CH

A	A	A	A	A	A	A	A	A	A	A	A
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is H, and W is N

A	A	A	A	A	A	A	A	A	A	A	A
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60

A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24

A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF₃, R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF₃, R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72

A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24

A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF_3 , R^{1b} is Cl, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF_3 , R^{1b} is Cl, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is Cl, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72

A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is Cl, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

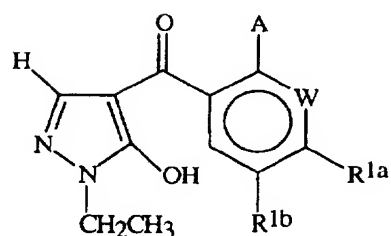
R^{1a} is CH₃, R^{1b} is SO₂CH₃, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH₃, R^{1b} is SO₂CH₃, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

TABLE 14



R^{1a} is CF_3 , R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF_3 , R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60

A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH₃, R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH₃, R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24

A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF_3 , R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF_3 , R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72

78

A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH₃, R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH₃, R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24

A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF₃, R^{1b} is Cl, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF₃, R^{1b} is Cl, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is Cl, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72

A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is Cl, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

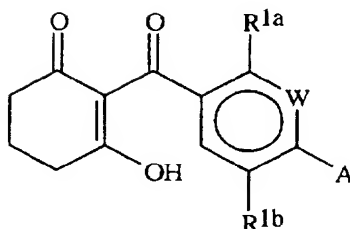
R^{1a} is CH_3 , R^{1b} is SO_2CH_3 , and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is SO_2CH_3 , and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

TABLE 15



R^{1a} is CF₃, R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF₃, R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60

A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24

A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF₃, R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF₃, R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72

A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is CN, and W is N

Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is CN, and W is CH

Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is CN, and W is N

Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is CN, and W is CH

Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24

A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF_3 , R^{1b} is Cl, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF_3 , R^{1b} is Cl, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is Cl, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72

A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is Cl, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

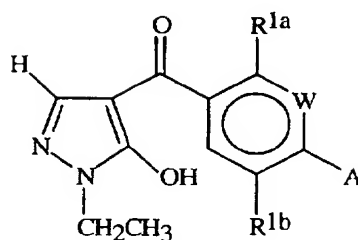
R^{1a} is CH_3 , R^{1b} is SO_2CH_3 , and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is SO_2CH_3 , and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

TABLE 16



R^{1a} is CF_3 , R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF_3 , R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60

A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is H, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is H, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24

A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF_3 , R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF_3 , R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72

A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH₃, R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH₃, R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is SO_2CH_3 , R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is CN, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is $SO_2CH_2CH_3$, R^{1b} is CN, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24

A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF₃, R^{1b} is Cl, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CF₃, R^{1b} is Cl, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is Cl, and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72

A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is Cl, R^{1b} is Cl, and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

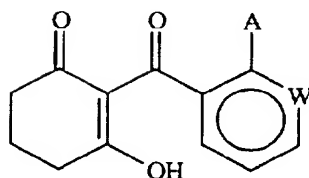
R^{1a} is CH_3 , R^{1b} is SO_2CH_3 , and W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

R^{1a} is CH_3 , R^{1b} is SO_2CH_3 , and W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

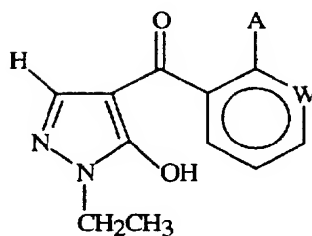
TABLE 17

W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

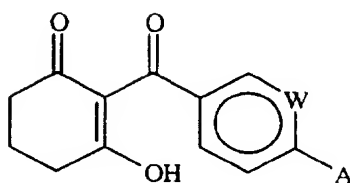
TABLE 18W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

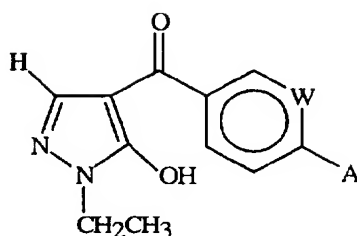
TABLE 19

W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

TABLE 20W is CH

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

W is N

<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>	<u>A</u>
A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
A-13	A-14	A-15	A-16	A-17	A-18	A-19	A-20	A-21	A-22	A-23	A-24
A-25	A-26	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-34	A-35	A-36
A-37	A-38	A-39	A-40	A-41	A-42	A-43	A-44	A-45	A-46	A-47	A-48
A-49	A-50	A-51	A-52	A-53	A-54	A-55	A-56	A-57	A-58	A-59	A-60
A-61	A-62	A-63	A-64	A-65	A-66	A-67	A-68	A-69	A-70	A-71	A-72
A-73	A-74	A-75	A-76	A-77	A-78	A-79	A-80	A-81	A-82	A-83	A-84
A-85	A-86	A-87	A-88	A-89	A-90	A-91	A-92	A-93			

Formulation/Utility

Compounds of this invention will generally be used as a formulation or composition with an agriculturally suitable carrier comprising at least one of a liquid diluent, a solid diluent or a surfactant. The formulation or composition ingredients are selected to be consistent with the physical properties of the active ingredient, mode of application and environmental factors such as soil type, moisture and temperature. Useful formulations include liquids such as solutions (including emulsifiable concentrates), suspensions,

emulsions (including microemulsions and/or suspoemulsions) and the like which optionally can be thickened into gels. Useful formulations further include solids such as dusts, powders, granules, pellets, tablets, films, and the like which can be water-dispersible ("wetttable") or water-soluble. Active ingredient can be (micro)encapsulated and further

5 formed into a suspension or solid formulation; alternatively the entire formulation of active ingredient can be encapsulated (or "overcoated"). Encapsulation can control or delay release of the active ingredient. Sprayable formulations can be extended in suitable media and used at spray volumes from about one to several hundred liters per hectare. High-strength compositions are primarily used as intermediates for further formulation.

10 The formulations will typically contain effective amounts of active ingredient, diluent and surfactant within the following approximate ranges which add up to 100 percent by weight.

	Weight Percent		
	<u>Active Ingredient</u>	<u>Diluent</u>	<u>Surfactant</u>
Water-Dispersible and Water-soluble Granules, Tablets and Powders.	5-90	0-94	1-15
Suspensions, Emulsions, Solutions (including Emulsifiable Concentrates)	5-50	40-95	0-15
Dusts	1-25	70-99	0-5
Granules and Pellets	0.01-99	5-99.99	0-15
High Strength Compositions	90-99	0-10	0-2

Typical solid diluents are described in Watkins, et al., *Handbook of Insecticide Dust Diluents and Carriers*, 2nd Ed., Dorland Books, Caldwell, New Jersey. Typical liquid

15 diluents are described in Marsden, *Solvents Guide*, 2nd Ed., Interscience, New York, 1950. *McCutcheon's Detergents and Emulsifiers Annual*, Allured Publ. Corp., Ridgewood, New Jersey, as well as Sisely and Wood, *Encyclopedia of Surface Active Agents*, Chemical Publ. Co., Inc., New York, 1964, list surfactants and recommended uses. All formulations can contain minor amounts of additives to reduce foam, caking, corrosion, microbiological

20 growth and the like, or thickeners to increase viscosity.

Surfactants include, for example, polyethoxylated alcohols, polyethoxylated alkylphenols, polyethoxylated sorbitan fatty acid esters, dialkyl sulfosuccinates, alkyl sulfates, alkylbenzene sulfonates, organosilicones, *N,N*-dialkyltaurates, lignin sulfonates, naphthalene sulfonate formaldehyde condensates, polycarboxylates, and

25 polyoxyethylene/polyoxypropylene block copolymers. Solid diluents include, for example, clays such as bentonite, montmorillonite, attapulgite and kaolin, starch, sugar, silica, talc, diatomaceous earth, urea, calcium carbonate, sodium carbonate and bicarbonate, and sodium sulfate. Liquid diluents include, for example, water, *N,N*-dimethylformamide, dimethyl

sulfoxide, *N*-alkylpyrrolidone, ethylene glycol, polypropylene glycol, paraffins, alkylbenzenes, alkylnaphthalenes, oils of olive, castor, linseed, tung, sesame, corn, peanut, cotton-seed, soybean, rape-seed and coconut, fatty acid esters, ketones such as cyclohexanone, 2-heptanone, isophorone and 4-hydroxy-4-methyl-2-pentanone, and alcohols
5 such as methanol, cyclohexanol, decanol and tetrahydrofurfuryl alcohol.

Solutions, including emulsifiable concentrates, can be prepared by simply mixing the ingredients. Dusts and powders can be prepared by blending and, usually, grinding as in a hammer mill or fluid-energy mill. Suspensions are usually prepared by wet-milling; see, for example, U.S. 3,060,084. Granules and pellets can be prepared by spraying the active
10 material upon preformed granular carriers or by agglomeration techniques. See Browning, "Agglomeration", *Chemical Engineering*, December 4, 1967, pp 147-48, *Perry's Chemical Engineer's Handbook*, 4th Ed., McGraw-Hill, New York, 1963, pages 8-57 and following, and WO 91/13546. Pellets can be prepared as described in U.S. 4,172,714. Water-dispersible and water-soluble granules can be prepared as taught in U.S. 4,144,050,
15 U.S. 3,920,442 and DE 3,246,493. Tablets can be prepared as taught in U.S. 5,180,587, U.S. 5,232,701 and U.S. 5,208,030. Films can be prepared as taught in GB 2,095,558 and U.S. 3,299,566.

For further information regarding the art of formulation, see U.S. 3,235,361, Col. 6, line 16 through Col. 7, line 19 and Examples 10-41; U.S. 3,309,192, Col. 5, line 43 through
20 Col. 7, line 62 and Examples 8, 12, 15, 39, 41, 52, 53, 58, 132, 138-140, 162-164, 166, 167 and 169-182; U.S. 2,891,855, Col. 3, line 66 through Col. 5, line 17 and Examples 1-4; Klingman, *Weed Control as a Science*, John Wiley and Sons, Inc., New York, 1961, pp 81-96; and Hance et al., *Weed Control Handbook*, 8th Ed., Blackwell Scientific Publications, Oxford, 1989.

25 In the following Examples, all percentages are by weight and all formulations are prepared in conventional ways. Compound numbers refer to compounds in Index Tables A-C.

Example A

High Strength Concentrate

30	Compound 1	98.5%
	silica aerogel	0.5%
	synthetic amorphous fine silica	1.0%.

Example BWettable Powder

	Compound 15	65.0%
	dodecylphenol polyethylene glycol ether	2.0%
5	sodium ligninsulfonate	4.0%
	sodium silicoaluminate	6.0%
	montmorillonite (calcined)	23.0%.

Example CGranule

10	Compound 25	10.0%
	attapulgate granules (low volatile matter, 0.71/0.30 mm; U.S.S. No. 25-50 sieves)	90.0%.

Example DExtruded Pellet

15	Compound 26	25.0%
	anhydrous sodium sulfate	10.0%
	crude calcium ligninsulfonate	5.0%
	sodium alkyl naphthalenesulfonate	1.0%
	calcium/magnesium bentonite	59.0%.

20 Test results indicate that the compounds of the present invention are highly active preemergent and postemergent herbicides or plant growth regulants. Many of them have utility for broad-spectrum pre- and/or postemergence weed control in areas where complete control of all vegetation is desired such as around fuel storage tanks, industrial storage areas, parking lots, drive-in theaters, air fields, river banks, irrigation and other waterways, around

25 billboards and highway and railroad structures. Some of the compounds are useful for the control of selected grass and broadleaf weeds with tolerance to important agronomic crops which include but are not limited to alfalfa, barley, cotton, wheat, rape, sugar beets, corn (maize), sorghum, soybeans, rice, oats, peanuts, vegetables, tomato, potato, perennial

30 plantation crops including coffee, cocoa, oil palm, rubber, sugarcane, citrus, grapes, fruit trees, nut trees, banana, plantain, pineapple, hops, tea and forests such as eucalyptus and conifers (e.g., loblolly pine), and turf species (e.g., Kentucky bluegrass, St. Augustine grass, Kentucky fescue and Bermuda grass). Those skilled in the art will appreciate that not all compounds are equally effective against all weeds. Alternatively, the subject compounds are useful to modify plant growth.

35 A herbicidally effective amount of the compounds of this invention is determined by a number of factors. These factors include: formulation selected, method of application, amount and type of vegetation present, growing conditions, etc. In general, a herbicidally effective amount of compounds of this invention is 0.001 to 20 kg/ha with a preferred range

of 0.004 to 1.0 kg/ha. One skilled in the art can easily determine the herbicidally effective amount necessary for the desired level of weed control.

Compounds of this invention can be used alone or in combination with other commercial herbicides, insecticides or fungicides. Compounds of this invention can also be used in combination with commercial herbicide safeners such as benoxacor, dichlormid and furilazole to increase safety to certain crops. A mixture of one or more of the following herbicides with a compound of this invention may be particularly useful for weed control: acetochlor, acifluorfen and its sodium salt, aclonifen, acrolein (2-propenal), alachlor, ametryn, amidosulfuron, amitrole, ammonium sulfamate, anilofos, asulam, atrazine, azafenidin, azimsulfuron, benazolin, benazolin-ethyl, benfluralin, benfuresate, bensulfuron-methyl, bensulide, bentazone, bifenox, bispyribac and its sodium salt, bromacil, bromoxynil, bromoxynil octanoate, butachlor, butralin, butroxydim (ICIA0500), butylate, caloxydim (BAS 620H), carfentrazone-ethyl, chlomethoxyfen, chloramben, chlorbromuron, chloridazon, chlorimuron-ethyl, chlornitrofen, chlorotoluron, chlorpropham, chlorsulfuron, chlorthal-dimethyl, cinmethylin, cinosulfuron, clethodim, clomazone, clopyralid, clopyralid-olamine, cyanazine, cycloate, cyclosulfamuron, 2,4-D and its butotyl, butyl, isooctyl and isopropyl esters and its dimethylammonium, diolamine and trolamine salts, daimuron, dalapon, dalapon-sodium, dazomet, 2,4-DB and its dimethylammonium, potassium and sodium salts, desmedipham, desmetryn, dicamba and its diglycolammonium, dimethylammonium, potassium and sodium salts, dichlobenil, dichlorprop, diclofop-methyl, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-5-methyl-3-pyridinecarboxylic acid (AC 263,222), difenzoquat metilsulfate, diflufenican, dimepiperate, dimethenamid, dimethylarsinic acid and its sodium salt, dinitramine, diphenamid, diquat dibromide, dithiopyr, diuron, DNOC, endothal, EPTC, esprocarb, ethalfluralin, ethametsulfuron-methyl, ethofumesate, ethoxysulfuron, fenoxaprop-ethyl, fenoxaprop-P-ethyl, fenuron, fenuron-TCA, flamprop-methyl, flamprop-M-isopropyl, flamprop-M-methyl, flazasulfuron, fluazifop-butyl, fluazifop-P-butyl, fluchloralin, flumetsulam, flumiclorac-pentyl, flumioxazin, fluometuron, fluoroglycofen-ethyl, flupoxam, flupyrsulfuron-methyl and its sodium salt, fluridone, flurochloridone, fluroxypyr, fluthiacet-methyl, fomesafen, fosamine-ammonium, glufosinate, glufosinate-ammonium, glyphosate, glyphosate-isopropylammonium, glyphosate-sesquisodium, glyphosate-trimesium, halosulfuron-methyl, haloxyfop-etotyl, haloxyfop-methyl, hexazinone, imazamethabenz-methyl, imazamox, imazapyr, imazaquin, imazaquin-ammonium, imazethapyr, imazethapyr-ammonium, imazosulfuron, ioxynil, ioxynil octanoate, ioxynil-sodium, isoproturon, isouron, isoxaben, isoxaflutole, lactofen, lenacil, linuron, maleic hydrazide, MCPA and its dimethylammonium, potassium and sodium salts, MCPA-isooctyl, mecoprop, mecoprop-P, mefenacet, mefluidide, metam-sodium, methabenzthiazuron, methylarsonic acid and its calcium, monoammonium, monosodium and

disodium salts, methyl [[[1-[5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrophenyl]-2-methoxyethylidene]amino]oxy]acetate (AKH-7088), methyl 5-[[[(4,6-dimethyl-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]-1-(2-pyridinyl)-1*H*-pyrazole-4-carboxylate (NC-330), metobenzuron, metolachlor, metosulam, metoxuron, metribuzin,

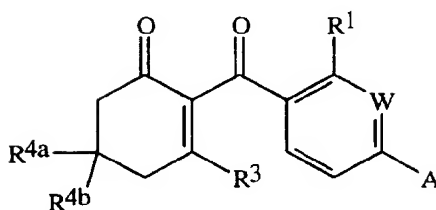
- 5 metsulfuron-methyl, molinate, monolinuron, napropamide, naptalam, neburon, nicosulfuron, norflurazon, oryzalin, oxadiazon, oxasulfuron, oxyfluorfen, paraquat dichloride, pebulate, pendimethalin, pentoxazone (KPP-314), perfluidone, phenmedipham, picloram, picloram-potassium, pretilachlor, primisulfuron-methyl, prometon, prometryn, propachlor, propanil, propaquizafop, propazine, propham, propyzamide, prosulfuron, pyrazolynate,
- 10 pyrazosulfuron-ethyl, pyridate, pyriminobac-methyl, pyrithiobac, pyrithiobac-sodium, quinclorac, quizalofop-ethyl, quizalofop-P-ethyl, quizalofop-P-tefuryl, rimsulfuron, sethoxydim, siduron, simazine, sulcotrione (ICIA0051), sulfentrazone, sulfometuron-methyl, TCA, TCA-sodium, tebuthiuron, terbacil, terbuthylazine, terbutryn, thenylchlor, thiafluamide (BAY 11390), thifensulfuron-methyl, thiobencarb, tralkoxydim, tri-allate, triasulfuron,
- 15 triaziflam, tribenuron-methyl, triclopyr, triclopyr-butotyl, triclopyr-triethylammonium, tridiphane, trifluralin, triflusulfuron-methyl, and vernolate.

In certain instances, combinations with other herbicides having a similar spectrum of control but a different mode of action will be particularly advantageous for preventing the development of resistant weeds.

- 20 Preferred for better control of undesired vegetation (e.g., lower use rate, broader spectrum of weeds controlled, or enhanced crop safety) or for preventing the development of resistant weeds are mixtures of a compound of this invention with a herbicide selected from the group nicosulfuron, rimsulfuron, nicosulfuron in combination with rimsulfuron, imazethapyr, sethoxydim, glyphosate, and glufosinate.

- 25 The following Tests demonstrate the control efficacy of the compounds of this invention against specific weeds. The weed control afforded by the compounds is not limited, however, to these species. See Index Tables A-D for compound descriptions. The abbreviation "dec." indicates that the compound appeared to decompose on melting. The abbreviation "Ex." stands for "Example" and is followed by a number indicating in which
- 30 example the compound is prepared.

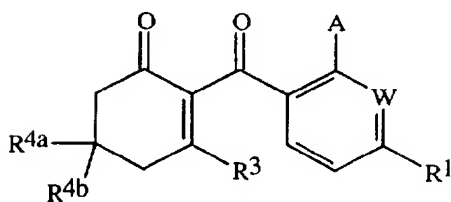
107

INDEX TABLE A

<u>Cmpd</u>	<u>R^{4a}</u>	<u>R^{4b}</u>	<u>R³</u>	<u>R¹</u>	<u>W</u>	<u>A</u>	<u>m.p. (°C)</u>
1	H	H	OH	Cl	CH	4-pyridyl	oil*
2	CH ₃	CH ₃	O ⁻ Et ₃ NH ⁺	Cl	CH	4-pyridyl	oil*
3	CH ₃	CH ₃	OH	Cl	CH	4-pyridyl	oil*
4	CH ₃	H	O ⁻ Et ₃ NH ⁺	Cl	CH	4-pyridyl	oil*
5	CH ₃	H	OH	Cl	CH	4-pyridyl	oil*
6	H	H	O ⁻ Et ₃ NH ⁺	Cl	CH	3-CF ₃ -1 <i>H</i> -pyrazol-1-yl	oil*
7	H	H	OH	Cl	CH	3-CF ₃ -1 <i>H</i> -pyrazol-1-yl	97-108
8	H	H	O ⁻ Et ₃ NH ⁺	Cl	CH	4-pyridyl	oil*
9	H	H	O ⁻ Et ₃ NH ⁺	Cl	CH	2-pyridyl	oil*
10	H	H	O ⁻ Et ₃ NH ⁺	CH ₃	CH	2-thiazolyl	oil*
11	H	H	OH	CH ₃	CH	2-thiazolyl	oil*
12	H	H	O ⁻ Et ₃ NH ⁺	Cl	CH	3-pyridyl	oil*
13	H	H	OH	Cl	CH	3-pyridyl	110-115

*See Index Table D for ¹H NMR data.

108

INDEX TABLE B

<u>Cmpd</u>	<u>R^{4a}</u>	<u>R^{4b}</u>	<u>R³</u>	<u>R¹</u>	<u>W</u>	<u>A</u>	<u>m.p.</u> <u>(°C)</u>
14	H	H	O ⁻ Et ₃ NH ⁺	CF ₃	N	4-pyridyl	oil*
15 (Ex. 3)	H	H	OH	CF ₃	N	4-pyridyl	137-145
19	H	H	O ⁻ Et ₃ NH ⁺	(CH ₃) ₂ CHCH ₂ CH ₂	N	4-pyridyl	oil*
20	H	H	OH	CF ₃	N	2-pyridyl	126-131
21	CH ₃	CH ₃	OH	CF ₃	N	2-pyridyl	oil*
22	H	H	OH	CF ₃	N	3-pyridyl	oil*
23 (Ex. 2)	H	H	OH	H	CH	3-CF ₃ -1H- pyrazol-1-yl	141-143
24	H	H	OH	CF ₃	CH	3-CF ₃ -1H- pyrazol-1-yl	123-126

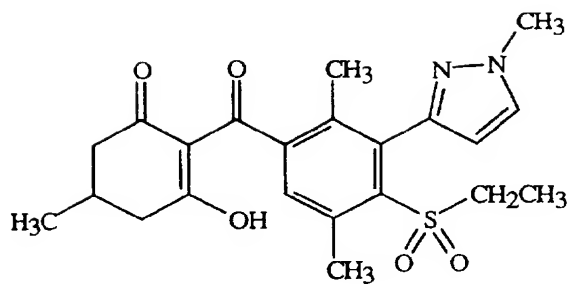
*See Index Table D for ¹H NMR data.INDEX TABLE C

<u>Cmpd No.</u>	<u>Structure</u>	<u>m.p. (°C)</u>
25 (Ex. 1)		93 (dec.)

109

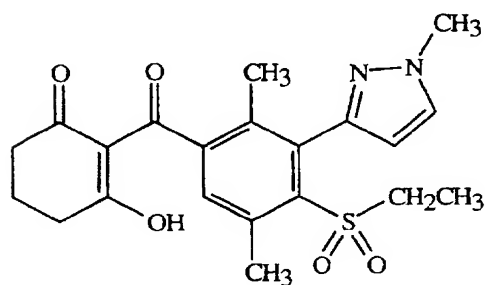
26

oil*



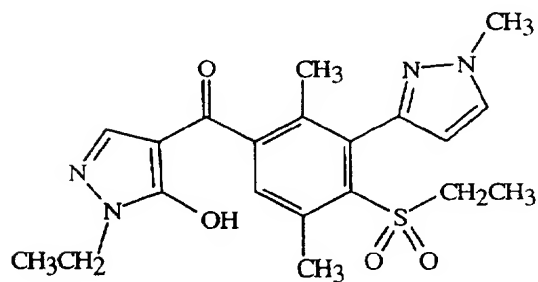
27

oil*



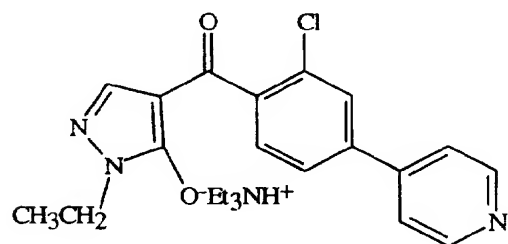
28

90-91



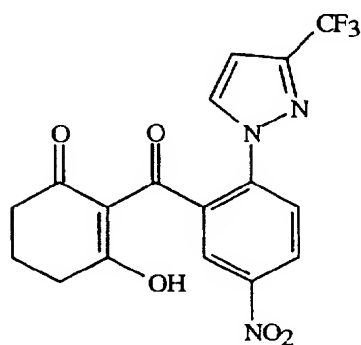
29

oil*



30

218-220



*See Index Table D for ^1H NMR data.

INDEX TABLE D

Cmpd No.	¹ H NMR Data (CDCl ₃ solution unless indicated otherwise) ^a
1	δ 9.7 (m, 2H), 7.63 (m, 2H), 7.62 (m, 1H), 7.6 (s, 1H), 7.37 (m, 1H), 2.8 (m, 2H), 2.5 (m, 2H), 2.08 (m, 2H).
2	δ 8.65 (d, 2H), 7.6 (d, 1H), 7.5 (m, 3H), 7.27 (m, 1H), 3.13 (m, 6H), 2.32 (s, 4H), 1.3 (m, 9H), 1.04 (s, 6H).
3	δ 8.8 (m, 2H), 7.84 (m, 2H), 7.69 (m, 2H), 7.38 (d, 1H), 2.4 (m, 2H), 1.2 (m, 2H), 1.04 (d, 6H).
4	δ 8.62 (d, 2H), 7.6 (s, 1H), 7.5 (m, 3H), 7.28 (d, 1H), 3.17 (m, 6H), 2.5 (d, 2H), 2.2 (d, 1H), 1.7 (m, 1H), 1.31 (m, 9H), 1.03 (d, 3H).
5	δ 8.72 (m, 2H), 7.65 (m, 3H), 7.5 (d, 1H), 7.3 (d, 1H), 2.6-2.0 (m, 4H), 1.6 (m, 1H), 1.13 (d, 6H).
6	δ 7.9 (s, 1H), 7.7 (s, 1H), 7.5 (d, 1H), 7.28 (d, 1H), 6.8 (s, 1H), 3.18 (m, 6H), 2.42 (m, 4H), 1.98 (m, 2H), 1.29 (m, 9H).
8	δ 8.63 (d, 2H), 7.48 (s, 1H), 7.46 (m, 3H), 7.2 (d, 1H), 3.15 (m, 6H), 2.43 (m, 4H), 1.98 (m, 2H), 1.29 (m, 9H).
9	δ 8.7 (m, 1H), 8.0 (s, 1H), 7.8 (d, 1H), 7.72 (m, 1H), 7.70 (m, 1H), 7.26 (m, 1H), 3.14 (m, 6H), 2.45 (m, 4H), 1.99 (m, 2H), 1.26 (m, 9H).
10	δ 7.8 (d, 1H), 7.77 (s, 1H), 7.6 (d, 1H), 7.3 (m, 1H), 7.18 (d, 1H), 3.09 (m, 6H), 2.45 (m, 4H), 2.34 (s, 3H), 1.99 (m, 2H), 1.26 (m, 9H).
11	δ 7.88 (m, 2H), 7.85 (m, 1H), 7.33 (s, 1H), 7.16 (d, 1H), 2.71 (m, 2H), 2.4 (m, 2H), 2.33 (s, 3H), 2.0 (m, 2H).
12	δ 8.8 (s, 1H), 8.6 (d, 1H), 7.8 (dd, 1H), 7.5 (s, 1H), 7.4 (d, 1H), 7.35 (m, 1H), 7.24 (d, 1H), 3.21 (m, 6H), 2.45 (m, 4H), 1.99 (m, 2H), 1.28 (m, 9H).
14	δ 8.6 (d, 1H), 8.55 (d, 1H), 7.8 (d, 1H), 7.5 (m, 3H), 3.0 (m, 6H), 2.33 (m, 4H), 1.8 (m, 2H), 1.16 (m, 9H).
19	δ 8.6 (m, 2H), 7.7 (m, 1H), 7.65 (m, 1H), 7.5 (m, 1H), 7.2 (m, 1H), 2.95 (m, 6H), 2.9 (m, 1H), 2.3 (m, 2H), 1.6 (m, 2H), 1.13 (m, 9H), 0.95 (m, 6H).
21	δ 8.47 (m, 1H), 8.44 (m, 1H), 7.8 (m, 1H), 7.73 (m, 1H), 7.7 (m, 1H), 7.25 (m, 1H), 2.6 (m, 1H), 2.02 (m, 2H), 0.92 (m, 6H).
22	δ 8.6 (m, 2H), 8.0 (m, 1H), 7.77 (m, 1H), 7.6 (m, 1H), 7.4 (m, 1H), 3.2-1.8 (m, 6H).
26	δ 7.57 (d, 1H), 7.1 (s, 1H), 6.1 (d, 1H), 3.67 (s, 3H), 3.2-2.1 (m, 10H), 1.73 (s, 3H), 1.29 (t, 3H), 1.13 (d, 3H).
27	δ 7.56 (d, 1H), 7.1 (s, 1H), 6.11 (d, 1H), 3.67 (s, 3H), 3.2-3.0 (m, 2H), 2.82 (t, 2H), 2.74 (s, 3H), 2.42 (t, 2H), 2.14-2.0 (m, 2H), 1.74 (s, 3H), 1.29 (t, 3H).

29 δ 8.7 (m, 2H), 7.7-7.4 (m, 5H), 7.09 (s, 1H), 3.9 (q, 2H), 3.24 (m, 6H), 1.35 (m, 12H).

a ^1H NMR data are in ppm downfield from tetramethylsilane. Couplings are designated by (s)-singlet, (d)-doublet, (dd)-doublet of doublets, (t)-triplet, (q)-quartet, (m)-multiplet.

5

BIOLOGICAL EXAMPLES OF THE INVENTION

TEST A

Seeds of barley (*Hordeum vulgare*), barnyardgrass (*Echinochloa crus-galli*), bedstraw (*Galium aparine*), blackgrass (*Alopecurus myosuroides*), chickweed (*Stellaria media*), cocklebur (*Xanthium strumarium*), corn (*Zea mays*), cotton (*Gossypium hirsutum*), 10 crabgrass (*Digitaria sanguinalis*), downy brome (*Bromus tectorum*), giant foxtail (*Setaria faberii*), lambsquarters (*Chenopodium album*), morningglory (*Ipomoea hederacea*), rape (*Brassica napus*), rice (*Oryza sativa*), sorghum (*Sorghum bicolor*), soybean (*Glycine max*), sugar beet (*Beta vulgaris*), velvetleaf (*Abutilon theophrasti*), wheat (*Triticum aestivum*), wild buckwheat (*Polygonum convolvulus*), wild oat (*Avena fatua*) and purple nutsedge (*Cyperus 15 rotundus*) tubers were planted and treated preemergence with test chemicals formulated in a non-phytotoxic solvent mixture which includes a surfactant.

At the same time, these crop and weed species were also treated with postemergence applications of test chemicals formulated in the same manner. Plants ranged in height from two to eighteen cm (one to four leaf stage) for postemergence treatments. Treated plants and 20 controls were maintained in a greenhouse for twelve to sixteen days, after which all species were compared to controls and visually evaluated. Plant response ratings, summarized in Table A, are based on a scale of 0 to 10 where 0 is no effect and 10 is complete control. A dash (-) response means no test result.

Table A COMPOUND

Rate 2000 g/ha 27

Preemergence

Barley	0
Barnyardgrass	0
Bedstraw	0
Blackgrass	0
Chickweed	0
Cocklebur	0
Corn	0
Cotton	0
Crabgrass	0
Downy brome	0
Giant foxtail	0
Lambsquarter	4
Morningglory	0
Nutsedge	0
Rape	0
Rice	0
Sorghum	0
Soybean	0
Sugar beet	0
Velvetleaf	0
Wheat	0
Wild buckwheat	0
Wild oat	0

Table A COMPOUND

Rate 1000 g/ha 20 21

Postemergence

Barley	0	2
Barnyardgrass	4	5
Bedstraw	9	3
Blackgrass	3	1
Chickweed	7	7
Cocklebur	8	7
Corn	1	1
Cotton	9	3
Crabgrass	2	3
Downy brome	1	0
Giant foxtail	2	1
Lambsquarter	8	9
Morningglory	9	9
Nutsedge	-	0
Rape	9	9
Rice	0	2
Sorghum	3	0
Soybean	8	5
Sugar beet	7	10
Velvetleaf	9	10
Wheat	0	1
Wild buckwheat	2	5
Wild oat	0	0

Table A COMPOUND

Rate 1000 g/ha 20 21

Preemergence

Barley	0	0
Barnyardgrass	0	0
Bedstraw	3	0
Blackgrass	1	0
Chickweed	3	5
Cocklebur	3	0
Corn	0	0
Cotton	2	0
Crabgrass	0	0
Downy brome	0	0
Giant foxtail	0	0
Lambsquarter	9	10
Morningglory	6	2
Nutsedge	0	0
Rape	3	5
Rice	0	0
Sorghum	0	0
Soybean	0	0
Sugar beet	8	10
Velvetleaf	8	7
Wheat	0	0
Wild buckwheat	0	0
Wild oat	0	0

Table A

COMPOUND

[illegible]

Table A	COMPOUND				
Rate 200 g/ha	20	21	23	24	25
Postemergence					
Barley	0	0	9	9	10
Barnyardgrass	2	1	9	9	10
Bedstraw	6	2	-	-	9
Blackgrass	0	0	7	10	10
Chickweed	4	7	9	9	9
Cocklebur	8	6	10	10	9
Corn	1	0	4	8	9
Cotton	7	2	10	10	9
Crabgrass	2	0	9	9	10
Downy brome	0	0	9	9	9
Giant foxtail	1	0	9	9	10
Lambsquarter	8	8	9	10	9
Morningglory	8	7	9	10	9
Nutsedge	-	0	4	9	4
Rape	4	8	10	10	10
Rice	0	0	9	9	10
Sorghum	1	0	9	9	10
Soybean	4	2	10	10	9
Sugar beet	2	10	10	10	10
Velvetleaf	9	8	10	7	9
Wheat	0	0	9	9	10
Wild buckwheat	2	4	9	8	9
Wild oat	0	0	10	10	10

Table A	COMPOUND				
Rate 200 g/ha	20	21	23	24	25
Preemergence					
Barley	0	0	1	2	0
Barnyardgrass	0	0	9	10	9
Bedstraw	0	0	8	5	8
Blackgrass	0	0	2	4	2
Chickweed	0	0	9	9	9
Cocklebur	-	0	4	5	5
Corn	0	0	0	2	0
Cotton	0	0	0	7	4
Crabgrass	0	0	10	10	10
Downy brome	0	0	7	10	6
Giant foxtail	0	0	3	6	8
Lambsquarter	8	9	10	10	9
Morningglory	1	0	3	6	3
Nutsedge	-	-	0	0	7
Rape	0	0	5	7	8
Rice	0	0	6	9	6
Sorghum	0	0	7	9	3
Soybean	0	0	5	9	4
Sugar beet	0	0	10	10	10
Velvetleaf	1	2	9	10	10
Wheat	0	0	3	5	1
Wild buckwheat	0	0	0	2	0
Wild oat	0	0	8	7	8

Table A

COMPOUND

[illegible]

Table A	COMPOUND			
Rate 50 g/ha	23	24	25	
Postemergence				
Barley	7	8	8	
Barnyardgrass	9	9	10	
Bedstraw	8	7	9	
Blackgrass	5	8	8	
Chickweed	8	9	8	
Cocklebur	9	10	9	
Corn	2	7	8	
Cotton	9	10	10	
Crabgrass	4	9	9	
Downy brome	5	7	8	
Giant foxtail	7	8	9	
Lambsquarter	9	9	9	
Morningglory	9	9	9	
Nutsedge	2	8	1	
Rape	9	7	10	
Rice	9	9	9	
Sorghum	9	9	10	
Soybean	9	9	8	
Sugar beet	10	10	10	
Velvetleaf	9	9	9	
Wheat	7	9	9	
Wild buckwheat	2	3	2	
Wild oat	8	4	10	

Table A	COMPOUND			
Rate 50 g/ha	23	24	25	
Preemergence				
Barley	0	0	0	
Barnyardgrass	3	3	2	
Bedstraw	6	-	1	
Blackgrass	1	1	0	
Chickweed	7	9	7	
Cocklebur	0	-	0	
Corn	0	0	0	
Cotton	0	0	0	
Crabgrass	10	10	6	
Downy brome	2	7	0	
Giant foxtail	1	1	2	
Lambsquarter	9	9	9	
Morningglory	1	4	1	
Nutsedge	-	0	-	
Rape	3	4	7	
Rice	0	3	2	
Sorghum	0	2	0	
Soybean	0	7	0	
Sugar beet	10	10	3	
Velvetleaf	8	8	1	
Wheat	0	2	0	
Wild buckwheat	0	1	0	
Wild oat	2	3	0	

TEST B

The compounds evaluated in this test were formulated in a non-phytotoxic solvent mixture which includes a surfactant and applied to the soil surface before plant seedlings emerged (preemergence application), to water that covered the soil surface (flood application), and to plants that were in the one-to-four leaf stage (postemergence application). A sandy loam soil was used for the preemergence and postemergence tests, while a silt loam soil was used in the flood test. Water depth was approximately 2.5 cm for the flood test and was maintained at this level for the duration of the test.

Plant species in the preemergence and postemergence tests consisted of barnyardgrass (*Echinochloa crus-galli*), barley (*Hordeum vulgare*), bedstraw (*Galium aparine*), blackgrass (*Alopecurus myosuroides*), chickweed (*Stellaria media*), cocklebur (*Xanthium strumarium*), corn (*Zea mays* v. *Pioneer 3394*), cotton (*Gossypium hirsutum*), crabgrass (*Digitaria sanguinalis*), downy brome (*Bromus tectorum*), giant foxtail (*Setaria faberii*), johnsongrass (*Sorghum halpense*), lambsquarters (*Chenopodium album*), morningglory (*Ipomoea hederacea*), pigweed (*Amaranthus retroflexus*), rape (*Brassica napus*), ryegrass (*Lolium multiflorum*), soybean (*Glycine max*), speedwell (*Veronica persica*), sugar beet (*Beta vulgaris*), velvetleaf (*Abutilon theophrasti*), wheat (*Triticum aestivum*), wild buckwheat (*Polygonum convolvulus*), and wild oat (*Avena fatua*). Additionally, two 10.3 cm pots each containing two plant of corn (*Zea mays*) of the varieties M17 and B73 were treated in addition to the normal compliment of crop species.

All plant species were planted one day before application of the compound for the preemergence portion of this test. Plantings of these species were adjusted to produce plants of appropriate size for the postemergence portion of the test. Plant species in the flood test consisted of rice (*Oryza sativa*), umbrella sedge (*Cyperus difformis*), duck salad (*Heteranthera limosa*), barnyardgrass2 (*Echinochloa crus-galli*) and Late watergrass (*Echinochloa oryzicola* grown to the 2 leaf stage for testing).

All plant species were grown using normal greenhouse practices. Visual evaluations of injury expressed on treated plants, when compared to untreated controls, were recorded approximately fourteen to twenty one days after application of the test compound. Plant response ratings, summarized in Table B, were recorded on a 0 to 100 scale where 0 is no effect and 100 is complete control. A dash (-) response means no test result.

Table B COMPOUND

Rate 500 g/ha 1

POSTEMERGENCE

Barley Igri 0

Barnyard 2 65

Barnyardgrass 90

Bedstraw 80

Blackgrass 20

Chickweed 90

Cocklebur 70

Corn 0

Corn (B73) -

Corn (M17) -

Cotton 50

Crabgrass 90

Downy Brome 10

Duck salad 60

Giant foxtail 90

Italn. Rygrass 10

Johnsongrass 60

Lambsquarter 90

Morningglory 90

Rape 70

Redroot Pigweed 70

Rice Japonica 25

Soybean 40

Speedwell 70

Sugar beet 70

Umbrella sedge 80

Velvetleaf 90

Wheat 30

Wild buckwheat 50

Wild oat 50

Table B COMPOUND

Rate 500 g/ha 1

PREEMERGENCE

Barley Igri 0

Barnyardgrass 60

Bedstraw 50

Blackgrass 0

Chickweed 30

Cocklebur 0

Corn 0

Cotton 0

Crabgrass 80

Downy Brome 0

Giant foxtail 50

Italn. Rygrass 0

Johnsongrass 0

Lambsquarter 90

Morningglory 0

Rape 20

Redroot Pigweed 0

Soybean 0

Speedwell 60

Sugar beet 30

Velvetleaf 90

Wheat 0

Wild buckwheat 0

Wild oat 0

Table B	COMPOUND			
Rate 250 g/ha	1	5	6	26
POSTEMERGENCE				
Barley Igri	0	15	-	-
Barnyard 2	45	20	10	0
Barnyardgrass	80	95	-	-
Bedstraw	70	90	-	-
Blackgrass	20	15	-	-
Chickweed	80	90	-	-
Cocklebur	70	70	-	-
Corn	0	15	-	-
Corn (B73)	-	65	-	-
Corn (M17)	-	60	-	-
Cotton	50	50	-	-
Crabgrass	90	90	-	-
Downy Brome	0	15	-	-
Duck salad	50	20	0	0
Giant foxtail	80	80	-	-
Italn. Rygrass	0	0	-	-
Johnsongrass	60	50	-	-
Lambsquarter	90	90	-	-
Morningglory	80	40	-	-
Rape	60	50	-	-
Redroot Pigweed	70	90	-	-
Rice Japonica	10	0	0	0
Soybean	40	40	-	-
Speedwell	-	10	-	-
Sugar beet	70	90	-	-
Umbrella sedge	70	30	30	0
Velvetleaf	90	80	-	-
Wheat	20	10	-	-
Wild buckwheat	50	70	-	-
Wild oat	30	20	-	-

Table B	COMPOUND	
Rate 250 g/ha	1	5
PREEMERGENCE		
Barley Igri	0	0
Barnyardgrass	20	0
Bedstraw	0	0
Blackgrass	0	0
Chickweed	0	10
Cocklebur	0	20
Corn	0	0
Cotton	0	0
Crabgrass	60	35
Downy Brome	0	0
Giant foxtail	20	10
Italn. Rygrass	0	0
Johnsongrass	0	0
Lambsquarter	70	80
Morningglory	0	0
Rape	0	0
Redroot Pigweed	0	40
Soybean	0	0
Speedwell	50	10
Sugar beet	0	60
Velvetleaf	70	20
Wheat	0	0
Wild buckwheat	0	0
Wild oat	0	0

Table B		COMPOUND									
Rate	125 g/ha	1	5	6	12	13	14	15	22	23	26
POSTEMERGENCE											
Barley Igri		0	0	-	0	0	0	0	100	70	-
Barnyard 2		20	10	0	0	10	0	0	95	20	0
Barnyardgrass		70	90	-	90	90	80	90	100	90	-
Bedstraw		30	80	-	20	98	50	70	95	85	-
Blackgrass		10	10	-	0	10	10	0	95	60	-
Chickweed		70	80	-	10	40	60	95	100	100	-
Cocklebur		50	60	-	70	70	80	90	100	100	-
Corn		0	10	-	0	0	0	0	30	0	-
Corn (B73)		-	40	-	60	60	10	5	-	-	-
Corn (M17)		-	30	-	0	25	0	5	-	-	-
Cotton		40	40	-	70	90	30	90	100	90	-
Crabgrass		70	80	-	90	90	35	50	90	100	-
Downy Brome		0	10	-	0	98	0	0	-	50	-
Duck salad		40	0	0	50	40	50	70	80	90	0
Giant foxtail		70	50	-	75	70	40	50	90	100	-
Italn. Rygrass		0	0	-	0	0	0	30	85	70	-
Johnsongrass		30	30	-	50	50	0	70	100	100	-
Lambsquarter		70	90	-	90	90	90	100	100	100	-
Morningglory		80	40	-	70	80	90	90	100	90	-
Rape		30	20	-	30	0	90	100	-	100	-
Redroot Pigweed		70	90	-	70	70	90	95	100	100	-
Rice Japonica		0	0	0	10	0	0	10	95	30	0
Soybean		20	30	-	50	50	40	50	90	90	-
Speedwell		50	0	-	0	20	80	90	100	-	-
Sugar beet		30	80	-	20	-	90	90	100	-	-
Umbrella sedge		60	10	20	60	70	50	60	50	85	0
Velvetleaf		90	60	-	100	90	90	100	100	95	-
Wheat		0	0	-	0	0	0	0	100	80	-
Wild buckwheat		20	40	-	60	98	90	90	70	50	-
Wild oat		30	0	-	0	0	0	0	100	80	-

Table B	COMPOUND							
Rate 125 g/ha	1	5	12	13	14	15	22	23
PREEMERGENCE								
Barley Igri	0	0	0	0	10	10	0	0
Barnyardgrass	0	0	0	0	0	20	100	50
Bedstraw	0	0	-	20	30	35	100	50
Blackgrass	0	0	0	0	0	0	30	20
Chickweed	0	0	0	70	70	90	100	80
Cocklebur	0	0	0	0	0	30	90	30
Corn	0	0	0	0	0	0	0	0
Cotton	0	0	10	0	0	100	90	50
Crabgrass	35	0	70	60	0	30	100	100
Downy Brome	0	0	0	0	10	20	100	0
Giant foxtail	10	0	35	20	0	10	35	75
Italn. Rygrass	0	0	0	0	0	0	80	10
Johnsongrass	0	0	30	0	0	40	100	60
Lambsquarter	40	40	30	95	100	95	100	100
Morningglory	0	0	10	0	10	20	100	60
Rape	0	0	0	0	30	80	0	35
Redroot Pigweed	0	30	30	10	60	70	-	95
Soybean	0	0	0	0	0	10	80	30
Speedwell	50	0	70	70	90	100	100	100
Sugar beet	0	60	30	10	100	100	100	100
Velvetleaf	40	0	30	100	100	100	100	100
Wheat	0	0	0	0	15	0	0	0
Wild buckwheat	0	0	0	0	0	60	40	0
Wild oat	0	0	0	10	0	10	0	10

Table B		COMPOUND										
Rate	62 g/ha	1	5	6	12	13	14	15	22	23	24	26
POSTEMERGENCE												
Barley Igri		0	0	-	0	0	0	0	85	60	50	-
Barnyard 2		10	0	0	0	0	0	0	35	10	10	0
Barnyardgrass		60	80	-	70	90	50	70	100	90	100	-
Bedstraw		30	70	-	0	98	30	70	85	-	75	-
Blackgrass		10	10	-	0	0	0	0	95	50	70	-
Chickweed		60	70	-	0	30	60	90	100	100	90	-
Cocklebur		20	60	-	20	70	80	90	100	95	90	-
Corn		0	0	-	0	0	0	0	20	0	55	-
Corn (B73)		-	15	-	40	50	5	5	-	-	-	-
Corn (M17)		-	20	-	0	5	0	0	-	-	-	-
Cotton		0	30	-	30	30	20	80	100	90	95	-
Crabgrass		50	80	-	90	80	15	30	90	100	95	-
Downy Brome		0	0	-	0	0	0	0	95	40	60	-
Duck salad		10	0	-	20	0	30	40	70	80	90	0
Giant foxtail		40	40	-	50	50	0	30	65	100	90	-
Italn. Rygrass		0	0	-	0	0	0	0	60	50	60	-
Johnsongrass		10	20	-	-	30	0	50	100	100	90	-
Lambsquarter		30	80	-	80	90	90	95	100	90	95	-
Morningglory		40	30	-	30	40	90	90	100	90	90	-
Rape		20	0	-	0	0	70	90	-	100	100	-
Redroot Pigweed		50	80	-	50	30	90	90	100	90	90	-
Rice Japonica		0	0	0	0	0	0	0	95	20	30	0
Soybean		0	30	-	40	35	40	40	90	90	90	-
Speedwell		50	0	-	0	20	50	80	100	80	100	-
Sugar beet		0	70	-	0	-	90	90	100	-	90	-
Umbrella sedge		20	0	0	30	20	30	50	50	70	80	0
Velvetleaf		80	50	-	100	80	90	90	100	95	95	-
Wheat		0	0	-	0	0	0	0	90	70	70	-
Wild buckwheat		10	0	-	10	98	70	80	70	40	70	-
Wild oat		20	0	-	0	0	0	0	100	60	60	-

Table B

COMPOUND

[illegible]

Table B	COMPOUND											
Rate 31 g/ha	1	5	6	12	13	14	15	22	23	24	25	26
POSTEMERGENCE												
Barley Igri	-	0	-	0	0	0	0	75	50	40	0	-
Barnyard 2	0	0	0	0	0	0	0	0	0	10	30	0
Barnyardgrass	-	70	-	60	70	20	50	100	90	95	90	-
Bedstraw	-	30	-	0	-	10	50	80	60	75	60	-
Blackgrass	-	0	-	0	0	0	0	75	30	70	30	-
Chickweed	-	50	-	0	20	60	80	100	-	90	90	-
Cocklebur	-	40	-	-	20	80	85	100	95	90	90	-
Corn	-	0	-	0	0	0	0	0	0	40	30	-
Corn (B73)	-	10	-	10	5	5	5	-	-	-	30	-
Corn (M17)	-	10	-	0	0	0	0	-	-	-	30	-
Cotton	-	20	-	10	20	0	50	95	90	90	100	-
Crabgrass	-	60	-	80	70	10	30	90	90	90	90	-
Downy Brome	-	0	-	0	0	0	0	75	30	60	0	-
Duck salad	0	0	0	0	0	0	10	45	60	70	20	0
Giant foxtail	-	40	-	35	30	0	20	50	90	80	90	-
Italn. Rygrass	-	0	-	0	0	0	0	60	40	50	0	-
Johnsongrass	-	15	-	-	20	0	30	80	100	90	80	-
Lambsquarter	-	70	-	80	80	90	90	100	90	95	90	-
Morningglory	-	30	-	20	40	70	90	90	90	90	90	-
Rape	-	0	-	0	0	70	80	-	80	90	90	-
Redroot Pigweed	-	80	-	30	20	80	90	95	90	90	100	-
Rice Japonica	0	0	0	0	0	0	0	15	10	20	0	0
Soybean	-	15	-	20	30	35	35	90	80	90	70	-
Speedwell	-	0	-	0	0	50	80	100	80	90	100	-
Sugar beet	-	70	-	0	98	80	80	100	-	90	90	-
Umbrella sedge	0	0	0	10	0	0	30	50	50	70	20	0
Velvetleaf	-	30	-	90	80	80	90	100	90	90	80	-
Wheat	-	0	-	0	0	0	0	85	50	60	20	-
Wild buckwheat	-	0	-	0	98	70	50	60	30	70	10	-
Wild oat	-	0	-	0	0	0	0	70	40	40	90	-

[illegible]

Table B		COMPOUND							
Rate	16 g/ha	12	13	14	15	22	23	24	25
POSTEMERGENCE									
Barley Igri		0	0	0	0	45	30	30	0
Barnyard 2		0	0	0	0	0	0	0	20
Barnyardgrass		40	20	0	30	90	90	95	90
Bedstraw		0	-	10	40	75	60	40	60
Blackgrass		0	0	0	0	70	30	35	20
Chickweed		0	0	50	60	100	80	80	80
Cocklebur		10	0	70	80	95	90	90	80
Corn		0	0	0	0	0	0	25	10
Corn (B73)		0	0	5	5	-	-	-	20
Corn (M17)		0	0	0	0	-	-	-	10
Cotton		10	0	0	30	95	80	85	50
Crabgrass		60	70	0	20	80	80	85	90
Downy Brome		0	0	0	0	70	30	30	0
Duck salad		0	0	0	0	25	10	50	0
Giant foxtail		30	20	0	0	40	80	60	85
Italn. Rygrass		0	0	0	0	40	30	50	0
Johnsongrass		-	20	0	30	70	80	80	60
Lambsquarter		50	60	80	80	100	85	90	70
Morningglory		10	20	50	80	90	90	90	90
Rape		0	0	40	70	-	60	50	90
Redroot Pigweed		0	20	70	80	90	90	80	80
Rice Japonica		0	0	0	0	0	0	10	0
Soybean		20	20	30	20	90	80	90	60
Speedwell		0	0	-	50	95	50	70	70
Sugar beet		0	98	80	80	100	-	90	80
Umbrella sedge		0	0	0	10	15	35	60	0
Velvetleaf		80	80	80	90	100	90	90	70
Wheat		0	0	0	0	70	35	50	10
Wild buckwheat		0	98	40	50	45	20	20	0
Wild oat		0	0	0	0	60	20	30	60

Table B		COMPOUND							
Rate	16 g/ha	12	13	14	15	22	23	24	25
PREEMERGENCE									
Barley Igri		0	0	0	0	0	0	0	0
Barnyardgrass		0	0	0	0	0	0	0	0
Bedstraw		0	0	0	0	20	20	50	0
Blackgrass		0	0	0	0	20	0	0	0
Chickweed		0	10	0	60	100	20	90	40
Cocklebur		0	0	0	-	0	0	0	0
Corn		0	0	0	0	0	0	0	0
Cotton		0	0	0	20	30	10	-	0
Crabgrass		20	0	0	10	100	80	70	40
Downy Brome		0	0	0	0	0	0	0	0
Giant foxtail		0	0	0	0	0	0	0	-
Italn. Rygrass		0	0	0	0	0	0	0	0
Johnsongrass		10	0	0	0	10	0	10	0
Lambsquarter		0	0	80	95	100	30	95	60
Morningglory		0	0	0	0	30	-	50	0
Rape		0	0	0	0	-	0	0	0
Redroot Pigweed		0	0	0	10	-	50	70	0
Soybean		0	0	0	0	40	0	0	0
Speedwell		30	60	80	90	100	0	90	20
Sugar beet		0	0	30	90	100	50	0	40
Velvetleaf		0	0	0	30	100	60	70	0
Wheat		0	0	0	0	0	0	0	0
Wild buckwheat		0	0	0	0	0	0	0	0
Wild oat		0	0	0	0	0	0	0	0

Table B	COMPOUND	
Rate 8 g/ha	24	25
POSTEMERGENCE		
Barley Igri	30	0
Barnyard 2	0	0
Barnyardgrass	90	85
Bedstraw	-	40
Blackgrass	35	20
Chickweed	70	80
Cocklebur	90	80
Corn	15	0
Corn (B73)	-	10
Corn (M17)	-	0
Cotton	70	40
Crabgrass	75	80
Downy Brome	30	0
Duck salad	20	0
Giant foxtail	40	75
Italn. Rygrass	40	0
Johnsongrass	70	60
Lambsquarter	60	70
Morningglory	85	90
Rape	40	80
Redroot Pigweed	60	60
Rice Japonica	10	0
Soybean	90	60
Speedwell	70	70
Sugar beet	90	70
Umbrella sedge	40	0
Velvetleaf	75	40
Wheat	35	0
Wild buckwheat	10	0
Wild oat	20	40

Table B	COMPOUND	
Rate 8 g/ha	24	25
PREEMERGENCE		
Barley Igri	0	0
Barnyardgrass	0	0
Bedstraw	0	0
Blackgrass	0	0
Chickweed	80	0
Cocklebur	0	0
Corn	0	0
Cotton	20	0
Crabgrass	50	20
Downy Brome	0	0
Giant foxtail	0	0
Italn. Rygrass	0	0
Johnsongrass	0	0
Lambsquarter	95	40
Morningglory	10	0
Rape	0	0
Redroot Pigweed	70	0
Soybean	0	0
Speedwell	90	0
Sugar beet	0	0
Velvetleaf	40	0
Wheat	0	0
Wild buckwheat	0	0
Wild oat	0	0

Table B COMPOUND

Rate 4 g/ha 25

POSTEMERGENCE

Barley Igri	0
Barnyard 2	0
Barnyardgrass	80
Bedstraw	30
Blackgrass	10
Chickweed	70
Cocklebur	75
Corn	0
Corn (B73)	10
Corn (M17)	0
Cotton	30
Crabgrass	70
Downy Brome	0
Duck salad	0
Giant foxtail	60
Italn. Rygrass	0
Johnsongrass	30
Lambsquarter	65
Morningglory	70
Rape	80
Redroot Pigweed	60
Rice Japonica	0
Soybean	40
Speedwell	60
Sugar beet	60
Umbrella sedge	0
Velvetleaf	30
Wheat	0
Wild buckwheat	0
Wild oat	10

Table B COMPOUND

Rate 4 g/ha 25

PREEMERGENCE

Barley Igri	0
Barnyardgrass	0
Bedstraw	0
Blackgrass	0
Chickweed	0
Cocklebur	0
Corn	0
Cotton	0
Crabgrass	0
Downy Brome	0
Giant foxtail	0
Italn. Rygrass	0
Johnsongrass	0
Lambsquarter	30
Morningglory	0
Rape	0
Redroot Pigweed	0
Soybean	0
Speedwell	0
Sugar beet	0
Velvetleaf	0
Wheat	0
Wild buckwheat	0
Wild oat	0

TEST C

Plastic pots were partially filled with silt loam soil. The soil was then saturated with water. Indica Rice (*Oryza sativa*) seed or seedlings at the 2.0 to 3.5 leaf stage; seeds, tubers or plant parts selected from arrowhead (*Sagittaria rigida*), barnyardgrass (*Echinochloa crus-*
 5 *galli*), ducksalad (*Heteranthera limosa*), early watergrass (*Echinochloa oryzoides*), junglerice (*Echinochloa colonum*), late watergrass (*Echinochloa oryzicola*), redstem (*Ammania species*), rice flatsedge (*Cyperus iria*), smallflower flatsedge (*Cyperus difformis*) and tighthead sprangletop (*Leptochloa fascicularis*), were planted into this soil. Plantings and
 10 waterings of these crops and weed species were adjusted to produce plants of appropriate size for the test. At the two leaf stage, water levels were raised to 3 cm above the soil surface and maintained at this level throughout the test. Chemical treatments were formulated in a non-phytotoxic solvent mixture which includes a surfactant and applied directly to the paddy water, by pipette, or to the plant foliage, by an air-pressure assisted,
 15 calibrated belt-conveyer spray system.

Treated plants and controls were maintained in a greenhouse for approximately 21 days, after which all species were compared to controls and visually evaluated. Plant response ratings, summarized in Table C, are reported on a 0 to 100 scale where 0 is no effect and 100 is complete control. A dash (-) response means no test result.

20

Table C	COMPOUND	
Rate 375 g/ha	13	15
PD/TA		
ducksalad	85	98
early watergras	-	20
junglerice	15	20
late watergrass	0	0
redstem	100	100
rice flatsedge	80	80
smallflower fla	80	95
tighthead spran	95	20
2 LF barnyard g	30	15
2 LF direct see	10	15
2 LF transp. in	15	15

Table C	COMPOUND	
Rate 250 g/ha	13	15
PD/TA		
ducksalad	70	95
early watergras	20	20
junglerice	10	25
late watergrass	0	-
redstem	95	100
rice flatsedge	75	45
smallflower fla	75	95
tighthead spran	95	30
2 LF barnyard g	15	15
2 LF direct see	0	15
2 LF transp. in	0	15

Table C	COMPOUND			
Rate 125 g/ha	13	15	23	25
PD/TA				
ducksalad	65	85	100	85
early watergras	0	15	-	25
junglerice	0	40	75	10
late watergrass	0	20	0	10
redstem	95	98	98	98
rice flatsedge	70	35	60	65
smallflower fla	70	85	100	95
tighthead spran	90	25	98	75
2 LF barnyard g	0	15	0	10
2 LF direct see	0	15	100	25
2 LF transp. in	10	10	60	30

Table C	COMPOUND			
Rate 32 g/ha	13	15	23	25
PD/TA				
ducksalad	65	0	80	20
early watergras	0	0	-	0
junglerice	0	0	15	0
late watergrass	0	0	0	0
redstem	20	0	30	20
rice flatsedge	60	35	10	40
smallflower fla	60	0	100	10
tighthead spran	80	40	95	75
2 LF barnyard g	0	0	0	0
2 LF direct see	0	10	0	15
2 LF transp. in	0	0	0	20

Table C	COMPOUND			
Rate 64 g/ha	13	15	23	25
PD/TA				
ducksalad	75	75	98	85
early watergras	0	15	-	15
junglerice	0	10	30	0
late watergrass	0	-	0	10
redstem	85	85	60	90
rice flatsedge	75	35	20	40
smallflower fla	75	75	100	85
tighthead spran	80	40	95	65
2 LF barnyard g	0	15	0	0
2 LF direct see	0	15	10	10
2 LF transp. in	0	0	10	25

Table C	COMPOUND	
Rate 16 g/ha	23	25
PD/TA		
ducksalad	95	10
early watergras	-	0
junglerice	25	0
late watergrass	0	0
redstem	30	20
rice flatsedge	5	40
smallflower fla	95	10
tighthead spran	95	60
2 LF barnyard g	0	0
2 LF direct see	0	10
2 LF transp. in	0	10

Table C		COMPOUND	
Rate	8 g/ha	23	25
PD/TA			
ducksalad		0	0
early watergras		-	0
junglerice		0	0
late watergrass		0	0
redstem		0	20
rice flatsedge		0	0
smallflower fla	10	0	
tighthead spran	40	0	
2 LF barnyard g	0	0	
2 LF direct see	0	10	
2 LF transp. in	0	0	

TEST D

- Seeds, tubers, or plant parts of alexandergrass (*Brachiaria plantaginea*),
5 bermudagrass (*Cynodon dactylon*), broadleaf signalgrass (*Brachiaria platyphylla*), common
purslane (*Portulaca oleracea*), common ragweed (*Ambrosia elatior*), cotton (*Gossypium*
hirsutum), dallisgrass (*Paspalum dilatatum*), goosegrass (*Eleusine indica*), guineagrass
(*Panicum maximum*), itchgrass (*Rottboellia exaltata*), johnson grass (*Sorghum halepense*),
large crabgrass (*Digitaria sanguinalis*), peanuts (*Arachis hypogaea*), pitted morningglory
10 (*Ipomoea lacunosa*), purple nutsedge (*Cyperus rotundus*), sandbur (*Cenchrus echinatus*),
sourgrass (*Trichachne insularis*), and surinam grass (*Brachiaria decumbens*) were planted
into greenhouse pots of flats containing greenhouse planting medium. Plant species were
grown in separate pots or individual compartments. Preemergence applications were made
within one day of planting the seed or plant part. Postemergence applications were applied
15 when the plants were in the two to four leaf stage (three to twenty cm).

- Test chemicals were formulated in a non-phytotoxic solvent mixture which included
a surfactant and applied preemergence and postemergence to the plants. Untreated control
plants and treated plants were placed in the greenhouse and visually evaluated for injury 13
to 21 days after herbicide application. Plant response ratings, summarized in Table D, are
20 based on a 0 to 100 scale where 0 is no injury and 100 is complete control. A dash (-)
response means no test result.

Table D	COMPOUND		
Rate 250 g/ha	22	23	25
POSTEMERGENCE			
Alexandergrass	80	75	95
Bermudagrass	80	60	80
Brdlf Sgnlgrass	90	95	100
Cmn Purslane	80	60	75
Cmn Ragweed	50	-	60
Cotton	90	40	-
Dallisgrass	85	75	35
Goosegrass	80	50	95
Guineagrass	80	90	75
Itchgrass	10	-	35
Johnson grass	90	95	100
Large Crabgrass	65	100	25
Peanuts	65	-	90
Pit Morninglory	80	90	30
Purple Nutsedge	75	50	20
Sandbur	60	75	20
Sourgrass	80	50	75
Surinam grass	80	75	90

Table D	COMPOUND		
Rate 250 g/ha	22	23	25
PREEMERGENCE			
Alexandergrass	100	100	100
Bermudagrass	100	100	100
Brdlf Sgnlgrass	100	100	10
Cmn Purslane	100	100	100
Cmn Ragweed	-	-	100
Cotton	100	40	10
Dallisgrass	100	98	70
Goosegrass	100	-	100
Guineagrass	100	100	50
Itchgrass	40	-	5
Johnson grass	98	100	75
Large Crabgrass	100	100	100
Peanuts	50	20	55
Pit Morninglory	95	100	10
Purple Nutsedge	75	0	0
Sandbur	98	80	45
Sourgrass	100	100	100
Surinam grass	100	100	98

Table D	COMPOUND		
Rate 125 g/ha	22	23	25
POSTEMERGENCE			
Alexandergrass	80	75	95
Bermudagrass	85	60	85
Brdlf Sgnlgrass	80	98	100
Cmn Purslane	70	30	75
Cmn Ragweed	50	-	-
Cotton	95	35	0
Dallisgrass	85	75	0
Goosegrass	85	35	-
Guineagrass	80	95	75
Itchgrass	5	35	0
Johnson grass	80	90	100
Large Crabgrass	70	100	-
Peanuts	65	50	90
Pit Morninglory	80	90	30
Purple Nutsedge	75	30	10
Sandbur	40	75	20
Sourgrass	80	60	20
Surinam grass	90	75	90

Table D	COMPOUND		
Rate 125 g/ha	22	23	25
PREEMERGENCE			
Alexandergrass	100	90	35
Bermudagrass	98	100	100
Brdlf Sgnlgrass	98	95	0
Cmn Purslane	60	100	100
Cmn Ragweed	-	-	100
Cotton	65	10	10
Dallisgrass	100	98	0
Goosegrass	100	-	100
Guineagrass	98	98	40
Itchgrass	35	-	5
Johnson grass	65	100	10
Large Crabgrass	100	100	100
Peanuts	-	-	10
Pit Morninglory	80	90	10
Purple Nutsedge	-	0	0
Sandbur	98	95	0
Sourgrass	100	100	100
Surinam grass	100	90	45

Table D	COMPOUND		
Rate 64 g/ha	22	23	25
POSTEMERGENCE			
Alexandergrass	80	65	100
Bermudagrass	75	50	75
Brdlf Sgnlgrass	95	95	80
Cmn Purslane	65	30	75
Cmn Ragweed	-	-	-
Cotton	90	35	0
Dallisgrass	85	75	0
Goosegrass	70	35	90
Guineagrass	75	80	35
Itchgrass	0	0	0
Johnson grass	80	80	100
Large Crabgrass	60	50	0
Peanuts	35	65	75
Pit Morninglory	75	90	30
Purple Nutsedge	75	20	10
Sandbur	20	0	20
Sourgrass	70	40	20
Surinam grass	80	65	-

Table D	COMPOUND		
Rate 64 g/ha	22	23	25
PREEMERGENCE			
Alexandergrass	40	0	0
Bermudagrass	100	100	75
Brdlf Sgnlgrass	95	0	0
Cmn Purslane	40	65	100
Cmn Ragweed	-	-	98
Cotton	25	0	0
Dallisgrass	98	50	0
Goosegrass	-	-	100
Guineagrass	65	35	0
Itchgrass	0	0	5
Johnson grass	-	10	0
Large Crabgrass	100	80	100
Peanuts	100	0	5
Pit Morninglory	65	75	0
Purple Nutsedge	20	0	0
Sandbur	30	0	0
Sourgrass	100	98	98
Surinam grass	98	35	0

Table D	COMPOUND		
Rate 32 g/ha	22	25	
POSTEMERGENCE			
Alexandergrass	40	90	
Bermudagrass	65	50	
Brdlf Sgnlgrass	80	35	
Cmn Purslane	30	75	
Cmn Ragweed	-	-	
Cotton	75	0	
Dallisgrass	70	0	
Goosegrass	40	90	
Guineagrass	65	20	
Itchgrass	0	-	
Johnson grass	75	100	
Large Crabgrass	65	0	
Peanuts	35	50	
Pit Morninglory	75	20	
Purple Nutsedge	65	0	
Sandbur	20	10	
Sourgrass	60	-	
Surinam grass	65	75	

Table D	COMPOUND		
Rate 32 g/ha	22	25	
PREEMERGENCE			
Alexandergrass	0	0	
Bermudagrass	50	0	
Brdlf Sgnlgrass	0	0	
Cmn Purslane	20	70	
Cmn Ragweed	-	10	
Cotton	25	0	
Dallisgrass	60	0	
Goosegrass	-	40	
Guineagrass	10	5	
Itchgrass	0	0	
Johnson grass	90	0	
Large Crabgrass	65	40	
Peanuts	100	5	
Pit Morninglory	65	100	
Purple Nutsedge	-	0	
Sandbur	0	0	
Sourgrass	98	85	
Surinam grass	0	0	

Table D COMPOUND

Rate 16 g/ha 22

POSTEMERGENCE

Alexandergrass 35

Bermudagrass 50

Brdlf Sgnlgrass 40

Cmn Purslane 30

Cmn Ragweed -

Cotton 70

Dallisgrass 35

Goosegrass 30

Guineagrass 35

Itchgrass 20

Johnson grass 35

Large Crabgrass 50

Peanuts 0

Pit Morninglory 65

Purple Nutsedge 5

Sandbur 0

Sourgrass 35

Surinam grass 35

Table D COMPOUND

Rate 16 g/ha 22

PREEMERGENCE

Alexandergrass 0

Bermudagrass 50

Brdlf Sgnlgrass 0

Cmn Purslane 0

Cmn Ragweed -

Cotton 0

Dallisgrass 50

Goosegrass -

Guineagrass 0

Itchgrass 0

Johnson grass 30

Large Crabgrass 20

Peanuts 0

Pit Morninglory 0

Purple Nutsedge 0

Sandbur 0

Sourgrass 90

Surinam grass 0

Table D	COMPOUND
Rate 8 g/ha	22
POSTEMERGENCE	
Alexandergrass	35
Bermudagrass	40
Brdlf Sgnlgrass	70
Cmn Purslane	35
Cmn Ragweed	-
Cotton	0
Dallisgrass	20
Goosegrass	30
Guineagrass	35
Itchgrass	0
Johnson grass	35
Large Crabgrass	35
Peanuts	0
Pit Morninglory	35
Purple Nutsedge	0
Sandbur	0
Sourgrass	35
Surinam grass	35

Table D	COMPOUND
Rate 8 g/ha	22
PREEMERGENCE	
Alexandergrass	0
Bermudagrass	0
Brdlf Sgnlgrass	0
Cmn Purslane	0
Cmn Ragweed	-
Cotton	0
Dallisgrass	50
Goosegrass	-
Guineagrass	0
Itchgrass	0
Johnson grass	-
Large Crabgrass	0
Peanuts	0
Pit Morninglory	0
Purple Nutsedge	0
Sandbur	0
Sourgrass	90
Surinam grass	0

TEST E

- Seeds of barnyardgrass (*Echinochloa crus-galli*), bindweed (*Concolculus arvensis*), black nightshade (*Solanum ptycanthum dunal*), cassia (*Cassia obtusifolia*), cocklebur (*Xanthium strumarium*), common ragweed (*Ambrosia artemisiifolia*), corn (*Zea mays* v. Pioneer 3394), corn2 (*Zea mays* v. IMR Ciba 4393), cotton (*Gossypium hirsutam*), crabgrass (*Digitaria spp.*), fall panicum (*Panicum dichotomiflorum*), giant foxtail (*Setaria faberii*), green foxtail (*Setaria viridis*), jimsonweed (*Datura stramonium*), johnsongrass (*Sorghum halepense*), lambsquarter (*Chenopodium album*), morningglory (*Ipomoea spp.*), pigweed (*Amaranthus retroflexus*), prickly sida (*Sida spinosa*), shattercane (*Sorghum vulgare*), signalgrass (*Brachiaria platyphylla*), smartweed (*Polygonum pensylvanicum*), soybean (*Glycine max* v. Williams 95) and soybean2 (*Glycine max* v. Asgrow 3304), sunflower (*Helianthus annuus*), velvetleaf (*Abutilon theophrasti*), wild proso (*Pancium miliaceum*), woolly cupgrass (*Eriochloa villosa*), yellow foxtail (*Setaria lutescens*) and purple nutsedge (*Cyperus rotundus*) tubers were planted into a sandy loam or clay loam soil. These crops and weeds were grown in the greenhouse until the plants ranged in height from two to eighteen cm (one to four leaf stage), then treated postemergence with the test chemicals formulated in a non-phytotoxic solvent mixture which included a surfactant. Pots treated in this fashion were placed in the greenhouse and maintained according to routine greenhouse procedures.
- Treated plants and untreated controls were maintained in the greenhouse approximately 14-21 days after application of the test compound. Visual evaluations of plant injury responses were then recorded. Plant response ratings, summarized in Table E, are reported on a 0 to 100 scale where 0 is no effect and 100 is complete control.

Table E COMPOUND

Rate 140 g/ha 23

POSTEMERGENCE

Barnyardgrass 80

Bindweed 70

Blk Nightshade 100

Cassia 55

Cocklebur 100

Corn 15

Corn2 20

Cotton 70

Crabgrass 70

Fall Panicum 90

Giant Foxtail 65

Green Foxtail 55

Jimsonweed 100

Johnson Grass 85

Lambsquarter 90

Morningglory 90

Nutsedge 25

Pigweed 75

Prickly Sida 50

Ragweed 100

Shattercane 80

Signalgrass 85

Smartweed 100

Soybean 85

Soybean2 80

Sunflower 100

Velvetleaf 85

Wild Proso 85

Woolly cupgrass 65

Yellow Foxtail 65

Table E COMPOUND

Rate 70 g/ha 23

POSTEMERGENCE

Barnyardgrass 100

Bindweed 60

Blk Nightshade 100

Cassia 50

Cocklebur 100

Corn 10

Corn2 15

Cotton 60

Crabgrass 60

Fall Panicum 80

Giant Foxtail 60

Green Foxtail 55

Jimsonweed 85

Johnson Grass 85

Lambsquarter 85

Morningglory 85

Nutsedge 0

Pigweed 70

Prickly Sida 30

Ragweed 100

Shattercane 70

Signalgrass 80

Smartweed 100

Soybean 85

Soybean2 80

Sunflower 100

Velvetleaf 75

Wild Proso 85

Woolly cupgrass 60

Yellow Foxtail 55

Table E

COMPOUND

Rate 35 g/ha 23

POSTEMERGENCE

Barnyardgrass 75

Bindweed 50

Blk Nightshade 100

Cassia 45

Cocklebur 100

Corn 0

Corn2 15

Cotton 60

Crabgrass 60

Fall Panicum 70

Giant Foxtail 55

Green Foxtail 40

Jimsonweed 80

Johnson Grass 80

Lambsquarter 85

Morningglory 85

Nutsedge 0

Pigweed 60

Prickly Sida 20

Ragweed 85

Shattercane 50

Signalgrass 80

Smartweed 100

Soybean 80

Soybean2 80

Sunflower 85

Velvetleaf 70

Wild Proso 75

Woolly cupgrass 55

Yellow Foxtail 50

Table E

COMPOUND

Rate 17 g/ha 23

POSTEMERGENCE

Barnyardgrass 35

Bindweed 50

Blk Nightshade 100

Cassia 15

Cocklebur 75

Corn 0

Corn2 15

Cotton 55

Crabgrass 55

Fall Panicum 65

Giant Foxtail 30

Green Foxtail 20

Jimsonweed 70

Johnson Grass 80

Lambsquarter 80

Morningglory 75

Nutsedge 0

Pigweed 60

Prickly Sida 15

Ragweed 80

Shattercane 30

Signalgrass 75

Smartweed 75

Soybean 75

Soybean2 80

Sunflower 70

Velvetleaf 60

Wild Proso 65

Woolly cupgrass 45

Yellow Foxtail 0

Table E

COMPOUND

Rate 8 g/ha 23

POSTEMERGENCE

Barnyardgrass 20

Bindweed 50

Blk Nightshade 65

Cassia 10

Cocklebur 45

Corn 0

Corn2 0

Cotton 55

Crabgrass 55

Fall Panicum 55

Giant Foxtail 25

Green Foxtail 0

Jimsonweed 45

Johnson Grass 55

Lambsquarter 75

Morningglory 60

Nutsedge 0

Pigweed 15

Prickly Sida 15

Ragweed 65

Shattercane 0

Signalgrass 65

Smartweed 60

Soybean 65

Soybean2 75

Sunflower 55

Velvetleaf 55

Wild Proso 60

Woolly cupgrass 40

Yellow Foxtail 0

TEST F

Compounds evaluated in this test were formulated in a non-phytotoxic solvent mixture which included a surfactant and applied to plants that were grown for various periods of time before treatment (postemergence application). A mixture of sandy loam soil and greenhouse potting mix in a 60:40 ratio was used for the postemergence test.

Plantings of these crops and weed species were adjusted to produce plants of appropriate size for the postemergence test. All plant species were grown using normal greenhouse practices. Crop and weed species include arrowleaf sida (*Sida rhombifolia*), barnyardgrass (*Echinochloa crus-galli*), cocklebur (*Xanthium strumarium*), common lambsquarters (*Chenopodium album*), corn (*Zea mays*), cotton (*Gossypium hirsutum*), eastern black nightshade (*Solanum ptycanthum*), fall panicum (*Panicum dichotomiflorum*), field bindweed (*Convolvulus arvensis*), Florida beggarweed (*Desmodium purpureum*), giant foxtail (*Setaria faberii*), hairy beggarticks (*Bidens pilosa*), ivyleaf morningglory (*Ipomoea hederacea*), johnsongrass (*Sorghum halepense*), ladysthumb (*Polygonum persicaria*), large crabgrass (*Digitaria sanguinalis*), purple nutsedge (*Cyperus rotundus*), redroot pigweed (*Amaranthus retroflexus*), soybean (*Glycine max*), surinam grass (*Brachiaria decumbens*), velvetleaf (*Abutilon theophrasti*) and wild poinsettia (*Euphorbia heterophylla*).

Treated plants and untreated controls were maintained in a greenhouse for approximately 14 to 21 days, after which all treated plants were compared to untreated controls and visually evaluated. Plant response ratings, summarized in Table F, were based upon a 0 to 100 scale where 0 was no effect and 100 was complete control. A dash response (-) means no test result.

Table F	COMPOUND		
Rate 140 g/ha	15	22	23
POSTEMERGENCE			
Arrowleaf Sida	90	100	90
Barnyardgrass	70	100	95
Cocklebur	90	85	95
Common Ragweed	100	100	95
Corn	0	40	5
Cotton	100	100	85
Estrn Blknight	100	100	100
Fall Panicum	80	90	95
Field Bindweed	80	85	90
Fl Beggarweed	-	100	95
Giant Foxtail	0	95	95
Hairy Beggartie	80	60	85
Ivyleaf Munglry	95	100	90
Johnsongrass	0	100	95
Ladysthumb	100	100	100
Lambsquarters	100	85	90
Large Crabgrass	30	100	95
Purple Nutsedge	90	80	80
Redroot Pigweed	100	100	95
Soybean	50	100	90
Surinam Grass	20	90	90
Velvetleaf	100	100	90
Wild Poinsettia	100	100	85

Table F	COMPOUND		
Rate 70 g/ha	15	22	23
POSTEMERGENCE			
Arrowleaf Sida	80	90	90
Barnyardgrass	30	100	95
Cocklebur	85	85	95
Common Ragweed	90	100	95
Corn	0	20	5
Cotton	100	90	80
Estrn Blknight	100	100	100
Fall Panicum	70	85	95
Field Bindweed	80	65	90
Fl Beggarweed	-	100	95
Giant Foxtail	0	80	95
Hairy Beggartie	60	60	80
Ivyleaf Munglry	90	90	80
Johnsongrass	0	85	90
Ladysthumb	80	100	100
Lambsquarters	100	80	90
Large Crabgrass	0	100	90
Purple Nutsedge	5	75	20
Redroot Pigweed	90	100	95
Soybean	50	100	90
Surinam Grass	0	85	90
Velvetleaf	100	100	80
Wild Poinsettia	90	90	85

Table F	COMPOUND		
Rate 35 g/ha	15	22	23
POSTEMERGENCE			
Arrowleaw Sida	80	60	70
Barnyardgrass	30	90	90
Cocklebur	80	85	95
Common Ragweed	80	100	90
Corn	0	15	0
Cotton	85	85	80
Estrn Blknight	100	100	100
Fall Panicum	50	80	90
Field Bindweed	80	60	85
Fl Beggarweed	-	100	80
Giant Foxtail	0	75	85
Hairy Beggartie	40	50	70
Ivyleaw Mrnglry	90	80	70
Johnsongrass	0	80	85
Ladysthumb	60	100	90
Lambsquarters	95	80	90
Large Crabgrass	0	90	90
Purple Nutsedge	0	60	0
Redroot Pigweed	90	100	90
Soybean	40	95	85
Surinam Grass	0	80	80
Velvetleaf	100	100	80
Wild Poinsettia	80	75	80

Table F	COMPOUND		
Rate 17 g/ha	15	22	23
POSTEMERGENCE			
Arrowleaw Sida	10	55	0
Barnyardgrass	0	85	80
Cocklebur	80	80	90
Common Ragweed	70	85	90
Corn	0	15	0
Cotton	60	80	70
Estrn Blknight	100	90	90
Fall Panicum	40	75	80
Field Bindweed	80	50	85
Fl Beggarweed	-	100	60
Giant Foxtail	0	65	50
Hairy Beggartie	40	45	60
Ivyleaw Mrnglry	85	75	60
Johnsongrass	0	70	50
Ladysthumb	-	100	90
Lambsquarters	95	75	85
Large Crabgrass	0	85	70
Purple Nutsedge	0	45	0
Redroot Pigweed	80	90	85
Soybean	40	85	85
Surinam Grass	0	75	60
Velvetleaf	100	100	70
Wild Poinsettia	80	70	80

Table F	COMPOUND		
Rate 8 g/ha	15	22	23
POSTEMERGENCE			
Arrowleaw Sida	0	10	0
Barnyardgrass	0	75	40
Cocklebur	80	80	80
Common Ragweed	70	70	90
Corn	0	10	0
Cotton	60	70	55
Estrn Blknight	100	90	90
Fall Panicum	40	70	60
Field Bindweed	50	30	70
Fl Beggarweed	-	80	50
Giant Foxtail	0	50	40
Hairy Beggartic	20	40	50
Ivyleaw Mrnglry	85	65	60
Johnsongrass	0	60	10
Ladysthumb	30	90	80
Lambsquarters	90	65	80
Large Crabgrass	0	65	60
Purple Nutsedge	0	35	0
Redroot Pigweed	80	85	85
Soybean	20	80	80
Surinam Grass	0	70	30
Velvetleaf	100	75	50
Wild Poinsettia	80	65	80

TEST G

Compounds evaluated in this test were formulated in a non-phytotoxic solvent mixture which includes a surfactant and applied to plants that were grown for various periods of time before treatment (postemergence application). A mixture of sandy loam soil and greenhouse potting mix in a 60:40 ratio was used for the postemergence test. Test compounds were applied 13 days after the last postemergence planting.

Plantings of these crops and weed species were adjusted to produce plants of appropriate size for the postemergence test. All plant species were grown using normal greenhouse practices. Crop and weed species include bristly starbur (*Acanthospermum hispidum*), alexandergrass (*Brachiaria plantaginea*), american black nightshade (*Solanum americanum*), apple-of-Peru (*Nicandra physaloides*), arrowleaf sida (*Sida rhombifolia*), Brazilian sicklepod (*Cassia tora Brazilian*), Surinam grass (*Brachiaria decumbens*), capim-colchao (*Digitaria horizontalis*), Crist. soybean (*Glycine max* v. *Cristalina*), florida beggarweed (*Desmodium purpureum*), hairy beggarticks (*Bidens pilosa*), slender amaranth (*Amaranthus viridis*), southern sandbur (*Cenchrus echinatus*), tall morningglory (*Ipomoea purpurea*), tropical spiderwort (*Commelina benghalensis*), W20 Soybean (*Glycine max* v. W20), W4-4 Soybean (*Glycine max* v. W4-4), corn (*Zea mays* v. *Pioneer 3394*) and wild pointsettia (*Euphorbia heterophylla*).

Treated plants and untreated controls were maintained in a greenhouse for approximately 13 days, after which all treated plants were compared to untreated controls and visually evaluated. Plant response ratings, summarized in Table G, are based upon a 0 to 100 scale where 0 is no effect and 100 is complete control.

Table G COMPOUND

Rate 140 g/ha 23

POSTEMERGENCE

Acanthospermum 100

Alexandergrass 100

Apple-of-Peru 100

Arrowleaf Sida 80

Surinam grass 100

Bl. Nightshade 100

Braz Sicklepod 80

Capim-Colch 100

Corn 20

Crist. Soybean 100

Fl. Beggarweed 100

H. Beggarticks 85

Morningglory 90

Sl. Amaranth 100

Southern Sandur 85

Tr. Spiderwort 100

Wld Pointsettia 100

W20 Soybean 100

W4-4 Soybean 100

Table G COMPOUND

Rate 70 g/ha 23

POSTEMERGENCE

Acanthospermum 100

Alexandergrass 100

Apple-of-Peru 80

Arrowleaf Sida 70

Surinam grass 100

Bl. Nightshade 100

Braz Sicklepod 65

Capim-Colch 100

Corn 15

Crist. Soybean 100

Fl. Beggarweed 85

H. Beggarticks 75

Morningglory 80

Sl. Amaranth 90

Southern Sandur 80

Tr. Spiderwort 90

Wld Pointsettia 85

W20 Soybean 100

W4-4 Soybean 100

Table G COMPOUND

Rate 35 g/ha 23

POSTEMERGENCE

Acanthospermum 100

Alexandergrass 100

Apple-of-Peru 80

Arrowleaf Sida 65

Surinam grass 100

Bl. Nightshade 100

Braz Sicklepod 60

Capim-Colch 100

Corn 0

Crist. Soybean 100

Fl. Beggarweed 85

H. Beggarticks 70

Morningglory 70

Sl. Amaranth 80

Southern Sandur 50

Tr. Spiderwort 80

Wld Pointsettia 85

W20 Soybean 90

W4-4 Soybean 100

Table G COMPOUND

Rate 17 g/ha 23

POSTEMERGENCE

Acanthospermum 100

Alexandergrass 100

Apple-of-Peru 75

Arrowleaf Sida 60

Surinam grass 90

Bl. Nightshade 100

Braz Sicklepod 35

Capim-Colch 65

Corn 0

Crist. Soybean 90

Fl. Beggarweed 85

H. Beggarticks 80

Morningglory 65

Sl. Amaranth 80

Southern Sandur 45

Tr. Spiderwort 70

Wld Pointsettia 70

W20 Soybean 80

W4-4 Soybean 100

Table G COMPOUND

Rate 8 g/ha 23

POSTEMERGENCE

Acanthospermum 55

Alexandergrass 85

Apple-of-Peru 65

Arrowleaf Sida 40

Surinam grass 80

Bl. Nightshade 85

Braz Sicklepod 10

Capim-Colch 60

Corn 0

Crist. Soybean 85

Fl. Beggarweed 100

H. Beggarticks 75

Morningglory 60

Sl. Amaranth 75

Southern Sandur 45

Tr. Spiderwort 65

Wld Pointsettia 70

W20 Soybean 75

W4-4 Soybean 90

TEST H

Compounds evaluated in this test were formulated in a non-phytotoxic solvent mixture which includes a surfactant and applied to plants that were in the one-to four leaf stage (postemergence application). A mixture of sandy loam soil and greenhouse potting mix in a 60:40 ratio was used for the postemergence test.

Plantings of these crops and weed species were adjusted to produce plants of appropriate size for the postemergence test. All plant species were grown using normal greenhouse practices. Crop and weed species include annual bluegrass (*Poa annua*), blackgrass (*Alopecurus myosuroides*), black nightshade (*Solanum nigra*), chickweed (*Stellaria media*), common poppy (*Papaver rhoeas*), deadnettle (*Lamium amplexicaule*), downy brome (*Bromus tectorum*), field violet (*Viola arvensis*), galium (*Galium aparine*), green foxtail (*Setaria viridis*), jointed goatgrass (*Aegilops cylindrica*), kochia (*Kochia scoparia*), lambsquarters (*Chenopodium album*), littleseed canarygrass (*Phalaris minor*), rape (*Brassica napus*), redroot pigweed (*Amaranthus retroflexus*), Russian thistle (*Salsola kali*), ryegrass (*Lolium multiflorum*), scentless chamomile (*Matricaria inodora*), spring barley (*Hordeum vulgare*), sugar beet (*Beta vulgaris*), sunflower (*Helianthus annuus*), ivyleaf speedwell (*Veronica hederifolia*), spring wheat (*Triticum aestivum*), winter wheat (*Triticum aestivum*), wild buckwheat (*Polygonum convolvulus*), wild mustard (*Sinapis arvensis*), wild oat (*Avena fatua*), windgrass (*Apera spica-venti*) and winter barley (*Hordeum vulgare*).

Treated plants and untreated controls were maintained in a greenhouse for approximately 21 to 28 days, after which all treated plants were compared to untreated controls and visually evaluated. Plant response ratings, summarized in Table H, are based upon a 0 to 100 scale where 0 is no effect and 100 is complete control. A dash response (-) means no test result.

Table H COMPOUND

Rate 125 g/ha 15

POSTEMERGENCE

Annual Bluegrass 0

Blackgrass 0

Blk Nightshade 75

Chickweed 85

Common poppy 55

Deadnettle 75

Downy brome 0

Field violet 75

Galium 30

Green foxtail 30

Jointed Goatgra 0

Kochia 85

Lambsquarters 75

LS Canarygrass 0

Rape 85

Redroot Pigweed 75

Russian Thistle 10

Ryegrass 0

Scentless Chamo 60

Spring Barley 0

Sugar beet 100

Sunflower 55

Veronica hederata 40

Wheat (Spring) 0

Wheat (Winter) 0

Wild buckwheat 75

Wild mustard 95

Wild oat 0

Windgrass 0

Winter Barley 0

Table H COMPOUND

Rate 62 g/ha 13 15 22 25

POSTEMERGENCE

Annual Bluegrass 10 0 100 65

Blackgrass 5 0 30 55

Blk Nightshade 60 75 100 100

Chickweed 45 75 100 100

Common poppy 10 50 - 100

Deadnettle 90 70 100 100

Downy brome 20 10 60 60

Field violet 100 75 70 100

Galium 40 50 40 60

Green foxtail 65 30 60 100

Jointed Goatgra 5 0 30 50

Kochia 80 60 100 60

Lambsquarters 85 80 100 100

LS Canarygrass 15 0 100 100

Rape 30 70 - 100

Redroot Pigweed 30 70 100 75

Russian Thistle 50 0 100 50

Ryegrass 5 0 35 10

Scentless Chamo 0 60 100 70

Spring Barley 10 0 40 5

Sugar beet 85 100 - 100

Sunflower 5 50 - 95

Veronica hederata 55 30 - 60

Wheat (Spring) 10 0 90 65

Wheat (Winter) 10 0 100 50

Wild buckwheat 60 65 70 30

Wild mustard 65 100 100 100

Wild oat 5 0 20 95

Windgrass 20 0 70 30

Winter Barley 10 0 40 10

Table H	COMPOUND		
Rate 31 g/ha	15	22	25
POSTEMERGENCE			
Annual Bluegras	-	50	60
Blackgrass	0	20	30
Blk Nightshade	-	100	85
Chickweed	-	100	85
Common poppy	-	-	100
Deadnettle	-	100	100
Downy brome	-	40	45
Field violet	-	65	75
Galium	-	20	55
Green foxtail	0	30	100
Jointed Goatgra	-	40	45
Kochia	-	85	45
Lambsquarters	-	100	100
LS Canarygrass	-	65	65
Rape	-	-	85
Redroot Pigweed	-	100	75
Russian Thistle	-	90	30
Ryegrass	0	20	10
Scentless Chamo	-	100	70
Spring Barley	0	20	65
Sugar beet	-	-	100
Sunflower	-	-	70
Veronica hederata	-	-	40
Wheat (Spring)	0	30	55
Wheat (Winter)	0	60	30
Wild buckwheat	-	35	30
Wild mustard	-	100	100
Wild oat	0	10	40
Windgrass	-	40	40
Winter Barley	0	20	5

Table H	COMPOUND		
Rate 16 g/ha	13	22	25
POSTEMERGENCE			
Annual Bluegras	5	40	50
Blackgrass	0	20	20
Blk Nightshade	35	100	100
Chickweed	15	100	75
Common poppy	5	-	60
Deadnettle	60	100	100
Downy brome	0	50	10
Field violet	60	50	-
Galium	10	20	50
Green foxtail	30	20	85
Jointed Goatgra	0	20	0
Kochia	60	70	35
Lambsquarters	50	100	100
LS Canarygrass	10	60	60
Rape	30	-	70
Redroot Pigweed	20	100	70
Russian Thistle	40	80	30
Ryegrass	2	20	5
Scentless Chamo	0	100	60
Spring Barley	5	30	2
Sugar beet	20	-	75
Sunflower	0	-	65
Veronica hederata	30	-	55
Wheat (Spring)	5	30	25
Wheat (Winter)	5	30	20
Wild buckwheat	30	50	5
Wild mustard	45	100	100
Wild oat	0	0	50
Windgrass	10	30	30
Winter Barley	0	20	5

Table H COMPOUND

Rate	8 g/ha	25
------	--------	----

POSTEMERGENCE

Annual Bluegrass	30
------------------	----

Blackgrass	10
------------	----

Blk Nightshade	75
----------------	----

Chickweed	60
-----------	----

Common poppy	50
--------------	----

Deadnettle	60
------------	----

Downy brome	15
-------------	----

Field violet	50
--------------	----

Galium	50
--------	----

Green foxtail	50
---------------	----

Jointed Goatgra	0
-----------------	---

Kochia	45
--------	----

Lambsquarters	100
---------------	-----

LS Canarygrass	50
----------------	----

Rape	60
------	----

Redroot Pigweed	70
-----------------	----

Russian Thistle	10
-----------------	----

Ryegrass	2
----------	---

Scentless Chamo	50
-----------------	----

Spring Barley	0
---------------	---

Sugar beet	50
------------	----

Sunflower	60
-----------	----

Veronica hederata	50
-------------------	----

Wheat (Spring)	10
----------------	----

Wheat (Winter)	20
----------------	----

Wild buckwheat	0
----------------	---

Wild mustard	70
--------------	----

Wild oat	10
----------	----

Windgrass	30
-----------	----

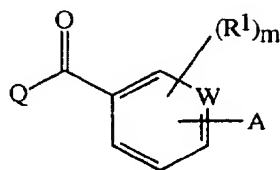
Winter Barley	2
---------------	---

156

CLAIMS

What is claimed is:

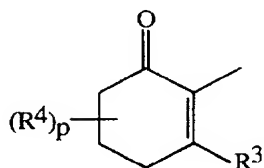
1. A compound selected from the formula



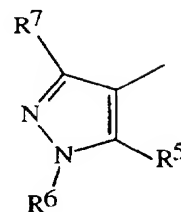
5

and *N*-oxides and agriculturally suitable salts thereof, wherein

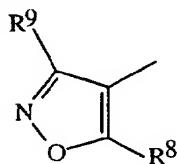
Q is



Q-1

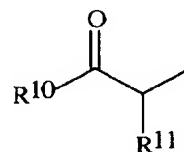


Q-2



Q-3

or



Q-4

10

A is a five- to ten-membered monocyclic or fused bicyclic ring system, which may be fully aromatic or partially saturated, containing 1 to 4 heteroatoms independently selected from the group nitrogen, oxygen, and sulfur, provided that each heterocyclic ring system contains no more than 2 oxygens and no more than 2 sulfurs, and each ring system is optionally substituted with one to three R^2 , provided that when a nitrogen atom of a heterocyclic ring is substituted with R^2 , then R^2 is other than halogen;

15

each R^1 is independently H, C_1 - C_6 alkyl, C_1 - C_6 haloalkyl, C_1 - C_6 alkoxy, C_1 - C_6 haloalkoxy, halogen, cyano, nitro, $-(Y)_t-S(O)_nR^{15}$ or $-(Y)_t-C(O)R^{15}$;

20

W is N or CH;

Y is O or NR¹²;

R² is C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₃-C₆ alkenyl, C₃-C₆ haloalkenyl, C₃-C₆ alkynyl, C₃-C₆ haloalkynyl, C₁-C₆ alkoxy, C₁-C₆ haloalkoxy, C₃-C₆ alkenyloxy, C₃-C₆ alkynyloxy, mercapto, C₁-C₆ alkylthio, C₁-C₃ haloalkylthio, C₃-C₆ alkenylthio, C₃-C₆ haloalkenylthio, C₃-C₆ alkynylthio, C₂-C₅ alkoxyalkylthio, C₃-C₅ acetylalkylthio, C₃-C₆ alkoxycarbonylalkylthio, C₂-C₄ cyanoalkylthio, C₁-C₆ alkylsulfinyl, C₁-C₆ haloalkylsulfinyl, C₁-C₆ alkylsulfonyl, C₁-C₆ haloalkylsulfonyl, aminosulfonyl, C₁-C₂ alkylaminosulfonyl, C₂-C₄ dialkylaminosulfonyl, (CH₂)_rR¹⁶, NR¹²R¹³, halogen, cyano or nitro; or R² is phenyl or benzylthio, each optionally substituted on the phenyl ring with C₁-C₃ alkyl, C₁-C₃ haloalkyl, C₁-C₃ alkoxy, C₁-C₃ haloalkoxy, 1-2 halogen, cyano or nitro;

R³ is OR¹⁴, SH, C₁-C₆ alkylthio, C₁-C₆ haloalkylthio, C₁-C₆ alkylsulfinyl, C₁-C₆ haloalkylsulfinyl, C₁-C₆ alkylsulfonyl, C₁-C₆ haloalkylsulfonyl, halogen or NR¹²R¹³; or R³ is phenylthio, phenylsulfonyl or -SCH₂C(O)Ph, each optionally substituted with C₁-C₃ alkyl, halogen, cyano or nitro;

each R⁴ is independently C₁-C₃ alkyl, C₁-C₃ alkoxy, C₁-C₃ alkylthio or halogen; or when two R⁴ are attached to the same carbon atom, then said R⁴ pair can be taken together to form -OCH₂CH₂O-, -OCH₂CH₂CH₂O-, -SCH₂CH₂S- or -SCH₂CH₂CH₂S-, each group optionally substituted with 1-4 CH₃;

R⁵ is OR¹⁴, SH, C₁-C₆ alkylthio, C₁-C₆ haloalkylthio, C₁-C₆ alkylsulfinyl, C₁-C₆ haloalkylsulfinyl, C₁-C₆ alkylsulfonyl, C₁-C₆ haloalkylsulfonyl, halogen or NR¹²R¹³; or R⁵ is phenylthio, phenylsulfonyl or -SCH₂C(O)Ph, each optionally substituted with C₁-C₃ alkyl, halogen, cyano or nitro;

R⁶ is H, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₃-C₆ alkenyl, C₃-C₆ alkynyl or -CH₂CH₂OR¹²; or R⁶ is phenyl or benzyl, each optionally substituted on the phenyl ring with C₁-C₃ alkyl, halogen, cyano or nitro;

R⁷ is H, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₁-C₆ alkoxy, C₁-C₆ haloalkoxy, halogen, cyano or nitro;

R⁸ is H, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₃-C₆ cycloalkyl or C₃-C₆ halocycloalkyl;

R⁹ is H, C₂-C₆ alkoxycarbonyl, C₂-C₆ haloalkoxycarbonyl, CO₂H or cyano;

R¹⁰ is C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₃-C₆ cycloalkyl optionally substituted with 1-4 C₁-C₃ alkyl or C₃-C₆ halocycloalkyl;

R¹¹ is cyano, C₂-C₆ alkoxycarbonyl, C₂-C₆ alkylcarbonyl, S(O)_nR¹³ or C(O)NR¹²R¹³;

each R¹² is independently H or C₁-C₆ alkyl;

R¹³ is C₁-C₆ alkyl or C₁-C₆ alkoxy; or

R¹² and R¹³ can be taken together as -CH₂CH₂-, -CH₂CH₂CH₂-, -CH₂CH₂CH₂CH₂CH₂- or -CH₂CH₂OCH₂CH₂-;

R¹⁴ is H, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₂-C₆ alkoxyalkyl, formyl, C₂-C₆ alkylcarbonyl, C₂-C₆ alkoxy carbonyl, C(O)NR¹²R¹³, C₁-C₆ alkylsulfonyl or C₁-C₆ haloalkylsulfonyl; or R¹⁴ is phenyl, benzyl, benzoyl, -CH₂C(O)phenyl or phenylsulfonyl, each optionally substituted on the phenyl ring with C₁-C₃ alkyl, halogen, cyano or nitro;

R¹⁵ is NR¹²R¹³, C₁-C₆ alkoxy, C₁-C₆ haloalkoxy, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₃-C₆ alkenyl, C₃-C₆ haloalkenyl, C₃-C₆ alkynyl, C₃-C₆ haloalkynyl or C₃-C₆ cycloalkyl; or R¹⁵ is phenyl optionally substituted with C₁-C₃ alkyl, C₁-C₃ haloalkyl, C₁-C₃ alkoxy, C₁-C₃ haloalkoxy, 1-2 halogen, cyano or nitro;

R¹⁶ is C₁-C₃ alkoxy, C₂-C₄ alkoxy carbonyl, C₁-C₃ alkylthio, C₁-C₃ alkylsulfinyl or C₁-C₃ alkylsulfonyl; or R¹⁶ is phenyl optionally substituted with C₁-C₃ alkyl, C₁-C₃ haloalkyl, C₁-C₃ alkoxy, C₁-C₃ haloalkoxy, 1-2 halogen, cyano or nitro;

m is 0, 1, 2 or 3;

n is 0, 1 or 2;

p is 0, 1, 2, 3 or 4;

r is 1, 2 or 3; and

t is 0 or 1;

provided that when W is CH and A is in the *meta* position with respect to the group Q-C(O)- of Formula I, then m is 3 and R¹ is other than H.

2. A compound of Claim 1 wherein

A is selected from the group 1*H*-pyrrolyl; furanyl; thienyl; 1*H*-pyrazolyl;

1*H*-imidazolyl; isoxazolyl; oxazolyl; isothiazolyl; thiazolyl; 1*H*-1,2,3-triazolyl;

2*H*-1,2,3-triazolyl; 1*H*-1,2,4-triazolyl; 4*H*-1,2,4-triazolyl; 1,2,3-oxadiazolyl;

1,2,4-oxadiazolyl; 1,2,5-oxadiazolyl; 1,3,4-oxadiazolyl; 1,2,3-thiadiazolyl;

1,2,4-thiadiazolyl; 1,2,5-thiadiazolyl; 1,3,4-thiadiazolyl; 1*H*-tetrazolyl;

2*H*-tetrazolyl; pyridinyl; pyridazinyl; pyrimidinyl; pyrazinyl; 1,3,5-triazinyl;

1,2,4-triazinyl; and A may optionally be substituted by one to three R², provided that when a nitrogen atom of a heterocyclic ring is substituted with R², then R² is other than halogen.

3. A compound of Claim 2 wherein

Q is Q-1.

4. A compound of Claim 3 wherein

each R¹ is independently C₁-C₃ alkyl, C₁-C₃ alkoxy, halogen or nitro;

R³ is OR¹⁴; and

R¹⁴ is H or C₁-C₄ alkylsulfonyl; or R¹⁴ is benzoyl or phenylsulfonyl, each optionally substituted with C₁-C₃ alkyl, halogen, cyano or nitro.

5. A compound of Claim 4 wherein

5 A is pyridinyl, pyridazinyl, pyrimidinyl or 1*H*-pyrazolyl;

R² is -(Y)_t-S(O)_nR¹⁵, CF₃, OCF₃, OCF₂H or cyano;

R¹⁵ is C₁-C₆ alkyl;

t is 0; and

n is 2.

10

6. A compound of Claim 2 wherein:

Q is Q-2.

7. A compound of Claim 6 wherein:

15 each R¹ is independently C₁-C₃ alkyl, C₁-C₃ alkoxy, halogen or nitro;

R⁵ is OR¹⁴;

R¹⁴ is H or C₁-C₄ alkylsulfonyl; or R¹⁴ is benzoyl or phenylsulfonyl, each optionally substituted with C₁-C₃ alkyl, halogen, cyano or nitro.

R⁶ is H, C₁-C₆ alkyl, or C₃-C₆ alkenyl; and

20

R⁷ is H.

8. A compound of Claim 7 wherein

A is pyridinyl, pyridazinyl, pyrimidinyl or 1*H*-pyrazolyl;

R² is -(Y)_t-S(O)_nR¹⁵, CF₃, OCF₃, OCF₂H or cyano;

25

R¹⁵ is C₁-C₆ alkyl;

t is 0; and

n is 2.

9. A compound of Claim 2 wherein

30

Q is Q-3.

10. A compound of Claim 9 wherein

each R¹ is independently C₁-C₃ alkyl, C₁-C₃ alkoxy, halogen or nitro;

R⁸ is H, C₁-C₃ alkyl, or cyclopropyl; and

35

R⁹ is H or C₂-C₃ alkoxycarbonyl.

11. A compound of Claim 10 wherein

A is pyridinyl, pyridazinyl, pyrimidinyl or 1*H*-pyrazolyl;

R^2 is $-(Y)_t-S(O)_nR^{15}$, CF_3 , OCF_3 , OCF_2H or cyano;

R^{15} is C_1-C_6 alkyl;

t is 0; and

n is 2.

5

12. A compound of Claim 2 wherein
Q is Q-4.

13. A compound of Claim 12 wherein

10

each R^1 is independently C_1-C_3 alkyl, C_1-C_3 alkoxy, halogen or nitro;

R^{10} is C_3-C_6 cycloalkyl or C_3-C_6 halocycloalkyl, each optionally substituted with 1-4
 C_1-C_3 alkyl; and

R^{11} is cyano or C_2-C_6 alkoxy carbonyl.

15

14. A compound of Claim 13 wherein

A is pyridinyl, pyridazinyl, pyrimidinyl or 1*H*-pyrazolyl;

R^2 is $-(Y)_t-S(O)_nR^{15}$, CF_3 , OCF_3 , OCF_2H or cyano;

R^{15} is C_1-C_6 alkyl;

t is 0; and

20

n is 2.

15. The compound of Claim 5 which is selected from the group

25

a) 3-hydroxy-2-[[6-(trifluoromethyl)[2,4'-bipyridin]-3-yl]carbonyl]-2-cyclohexen-1-one;

b) 2-[2-chloro-4-(4-pyridinyl)benzoyl]-3-hydroxy-2-cyclohexen-1-one; and

c) 2-[2,5-dimethyl-3-(1-methyl-1*H*-pyrazol-3-yl)-4-(methylsulfonyl)benzoyl]-3-hydroxy-2-cyclohexen-1-one.

30

16. A herbicidal composition comprising a herbicidally effective amount of a
compound of Claim 1 and at least one of a surfactant, a solid diluent or a liquid diluent.

17. A method for controlling the growth of undesired vegetation comprising
contacting the vegetation or its environment with a herbicidally effective amount of a
compound of Claim 1.

35

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 97/09569

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C07D213/50 A01N43/40 A01N43/56 A01N43/78 A01N43/80
C07D213/53 C07D231/12 C07D231/20 C07D277/24 C07D401/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 39 02 818 A (SANDOZ AG) 10 August 1989 see page 35 - page 36, paragraph 1 see page 38; claims 33,34 ---	1-5,16, 17
A	GB 2 122 188 A (NISSAN CHEMICAL IND LTD) 11 January 1984 see the whole document; in particular page 25; table 5, compound no. 3.9 ---	1,2,6-8, 16,17
P,Y	WO 96 26200 A (BASF AG ;DEYN WOLFGANG VON (DE); HILL REGINA LUISE (DE); KARDORFF) 29 August 1996 cited in the application see the whole document --- -/-	1-5, 15-17



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

30 September 1997

Date of mailing of the international search report

08.10.97

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Fink, D

INTERNATIONAL SEARCH REPORT

Intern. Application No

PCT/US 97/09569

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 319 075 A (NIPPON SODA CO) 7 June 1989 see the whole document; in particular page 3, line 30 ---	1-5, 15-17
P,Y	WO 96 26206 A (BASF AG ;DEYN WOLFGANG VON (DE); HILL REGINA LUISE (DE); KARDORFF) 29 August 1996 see the whole document ---	1,2,6-8, 16,17
Y	GB 1 463 473 A (SANKYO CO) 2 February 1977 see the whole document; in particular page 1, line 17 ---	1,2,6-8, 16,17
P,X	WO 96 26192 A (BASF AG ;DEYN WOLFGANG VON (DE); HILL REGINA LUISE (DE); KARDORFF) 29 August 1996 see the whole document ---	1,2, 9-11,16, 17
P,X	WO 96 26193 A (BASF AG ;DEYN WOLFGANG VON (DE); HILL REGINA LUISE (DE); KARDORFF) 29 August 1996 see the whole document -----	1,2, 12-14, 16,17

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 97/09569

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3902818 A	10-08-89	AU 2895589 A	03-08-89
		CN 1036202 A	11-10-89
		DK 40989 A	02-08-89
		FR 2626573 A	04-08-89
		GB 2215333 A	20-09-89
		JP 2001422 A	05-01-90
		NL 8900243 A	01-09-89
		PT 89570 B	31-05-94

GB 2122188 A	11-01-84	JP 1762410 C	28-05-93
		JP 4035462 B	11-06-92
		JP 58185568 A	29-10-83
		AU 1387383 A	27-10-83
		BR 8302112 A	27-12-83
		US 4557753 A	10-12-85

WO 9626200 A	29-08-96	AU 4875396 A	11-09-96

EP 0319075 A	07-06-89	AT 108764 T	15-08-94
		CA 1337818 A	26-12-95
		DE 3850749 D	25-08-94
		JP 2000726 A	05-01-90
		US 5110343 A	05-05-92

WO 9626206 A	29-08-96	AU 4665596 A	11-09-96

GB 1463473 A	02-02-77	JP 1001829 C	19-06-80
		JP 50126830 A	06-10-75
		JP 54036648 B	10-11-79
		AU 7934175 A	23-09-76
		CA 1077944 A	20-05-80
		CA 1069329 A	08-01-80
		CA 1075030 A	08-04-80
		DE 2513750 A	09-10-75
		FR 2274219 A	09-01-76
		US 4414392 A	08-11-83
		US 4301293 A	17-11-81
		US 4508910 A	02-04-85
		US 4063925 A	20-12-77
		US 4687858 A	18-08-87

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 97/09569

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 1463473 A		US 4146726 A	27-03-79
		US 4261729 A	14-04-81
-----		-----	-----
WO 9626192 A	29-08-96	AU 4875296 A	11-09-96
-----		-----	-----
WO 9626193 A	29-08-96	NONE	
-----		-----	-----